Pediatric MRCPCH

Board and Certification Review

1000 Questions and Explanations

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2023 edition

David Wood, MD, MPH

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About *Stat*Pearls

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Section 1

Question 1: A 17-year-old female is brought in by her parents for hair loss. The patient herself is not worried. The exam shows the part in her hair is widened with decreased hair density. The hair in the area is coarse and of multiple different lengths. Gentle traction does not pull out any hairs. The skin of the scalp has some light brown scales. The eyelashes show varying lengths. Which of the following would be the most appropriate question?

Choices:

1. Have you had a perm recently?
2. Do you color your hair?
3. Do you twirl or pull your hair?
4. Do you have a desire to eat paper or dirt?

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Photo:Contributed by DermNetNZ

Answer: 3 - Do you twirl or pull your hair?

Explanations:

- The patient most likely has trichotillomania, an impulse control disorder where the patient pulls out his or her own hair.
- It is often done unconsciously or in one's sleep.
- This is best treated with behavior modification as medication has not been shown to be very effective.
- Selective serotonin reuptake inhibitors are most commonly used but tricyclic antidepressants are also effective.

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Research Concepts:

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Trichotillomania




We update eBooks quarterly and Apps daily based on user feedback. Please tap flag to report any questions that need improvement.

Question 2: A young male has a solitary indurated penile ulcer with relatively clean margins, no obvious raised granulomatous areas, and no discoloration. It began as a hard, nonpainful nodule. Regional lymphadenopathy is present. What is the most likely etiologic agent?

Choices:

1. Haemophilus ducreyi
2. Human papillomavirus, serotype 11
3. Streptococcus pyogenes
4. Treponema pallidum



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Photo:Contributed by The Centers for Disease Control and Prevention (CDC)

Answer: 4 - Treponema pallidum

Explanations:

- Only Haemophilus ducreyi and Treponema pallidum produce nodular penile lesions that ulcerate.
- T. pallidum causes a hard nodule or chancre with no pain.
- H. ducreyi produces soft, painful chancres.
- Human papillomavirus produces warts that do not ulcerate.

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Research Concepts:

Syphilis

Moh'd Terbi




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Question 3: A 13-year-old male presents with the complaint of right knee pain for the past 2 months. He is an avid basketball player and states his pain is worse when he is playing and relieved by rest. What structure can be left permanently altered from this condition?

Choices:

1. Pes anserinus
2. Lateral meniscus
3. Anterior collateral ligament
4. Tibial tubercle



Moh'd Terbi

Photo:Contributed by Scott Dulebohn, MD

Answer: 4 - Tibial tubercle

Explanations:

- Apophysitis of the tibial tubercle is also known as Osgood-Schlatter disease. It presents as pain below the knee that increases with activity and is relieved by rest.
- Apophysitis of the tibial tubercle is due to overuse of the knee and excess physical stress where the patellar tendon inserts on the tibia. This causes repeated tension on the epiphyseal plate of the proximal tibia. It is most common in males between 10 and 15 years of age.
- Apophysitis of the tibial tubercle usually is diagnosed clinically, and there can be a palpable bony prominence at the tibial tuberosity.
- Treatment for apophysitis includes rest and ice to decrease inflammation and avoidance of high impact activities. Although symptoms usually resolve when the epiphyseal plate closes, the tibial tubercle may be permanently prominent.

Monica Teribi

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Research Concepts:

Osgood Schlatter Disease




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Question 4: A patient presents with hair loss in a well-defined area that started 3 weeks ago. The patient has no other complaints or significant medical history. On the exam, there is a 2 x 2-centimeter area without hair in the parietal area. The skin is smooth and without erythema. The hairs at the borders of the lesion come out with minimal traction. What is the most probable diagnosis?

Choices:

1. Tinea capitis
2. Alopecia areata
3. Lichen planopilaris
4. Telogen effluvium



Photo:Contributed by DermNetNZ

Answer: 2 - Alopecia areata

Explanations:

- Alopecia areata often occurs suddenly in a well-defined area.
- The cause is autoimmune and it is seen in all age groups.
- The skin of the involved area appears healthy.
- The condition rarely progresses to loss of all scalp hair.

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Research Concepts:

Alopecia Areata

Mohamed Erbi




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Question 5: A 17-year-old girl presents to the emergency department accompanied by law enforcement. The patient is emaciated and covered in flesh-colored, dome-shaped, pearly lesions on her trunk, thighs, and genitalia. She was recovered in a home handcuffed to a bed during a human trafficking raid. What skin infection is suspected?

Choices:

1. Pityriasis rosea
2. Rubella
3. Molluscum contagiosum
4. Chickenpox



Photo:Contributed by DermNetNZ

Answer: 3 - Molluscum contagiosum

Explanations:

- Molluscum contagiosum is a viral skin infection that is part of the poxvirus family.
- Molluscum contagiosum is common in children but can occur in immunocompromised individuals and be spread by sexual contact.
- It spontaneously disappears in some cases in a few months, but in patients with AIDS, it can last years and be quite extensive.
- The distinctive lesions aide in diagnosis along with a detailed history. A skin biopsy may be required.

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Moh'd Terbi

Research Concepts:

Molluscum Contagiosum




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Question 6: A 2-year-old previously healthy child presents with a 2-day history of a rash with a temperature of 102.1F. His mother reports the rash started on the face and then spread to the rest of the body and began blistering today. The lesions slough off with pressure and do not involve the oral mucosa. Which of the following antibiotics is appropriate for this condition?

Choices:

1. Ciprofloxacin
2. Aztreonam
3. Nafcillin
4. Penicillin



Photo:Contributed by DermNetNZ

Answer: 3 - Nafcillin

Explanations:

- This child has Staphylococcal scalded skin syndrome (SSSS). SSSS is caused by an exfoliative toxin.
- SSSS has resistance to penicillin and requires a penicillinase-resistant penicillin such as nafcillin or oxacillin.
- If the patient is suspected of a methicillin-resistant Staphylococcus aureus (MRSA) infection or lives in an area with significant MRSA prevalence, treatment should be with vancomycin or linezolid.
- Patients also need fluid rehydration and topical wound care.

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Moh'd Terbi

Research Concepts:

Staphylococcal Scalded Skin Syndrome




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Question 7: A patient is brought in with a rash present for over a year but worse for the past few days. The mother has tried many over-the-counter treatments with intermittent success. The child picks and scratches constantly. The exam shows dry and excoriated skin that is thickened. There are fissures, erosions, and crusty exudates. The worst areas are at the antecubital and popliteal fossa. A cluster of vesicles and lymphadenopathy are noted. What may be the cause of the vesicles?

Choices:

1. Varicella zoster
2. Contact dermatitis
3. Eczema herpeticum
4. Atopic dermatitis

Mohd Terbi



Photo:Contributed by DermNetNZ

Answer: 3 - Eczema herpeticum

Explanations:

- Herpes simplex may cause an infection in a patient with a skin barrier compromise.
- This patient has atopic eczema but may also have eczema herpeticum.
- The quickest method of diagnosis is the Tzanck preparation. Direct fluorescent antibody testing is confirmatory.
- This may require treatment with antiviral drugs. Acyclovir is dosed at 15 mg/kg/day intravenously.

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Moh'd Terbi

Research Concepts:

Eczema Herpeticum




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Question 8: A 3-year-old boy with painful swelling and crusted erosions on his face, feet, and hands after one hour's exposure to springtime sun a few days earlier is evaluated. His mother said he complained of pain within a few minutes after being outdoors, even though she applied sun protection factor (SPF) 50+ sunscreen thickly to all affected sites. His skin was otherwise fully covered by clothing. She said that she first became aware of his extreme sensitivity to the sun when he was a baby. Which of the following is true?

Choices:

1. A blood test will likely reveal increased protoporphyrins
2. Tests will likely reveal elevated urinary and fecal coproporphyrin
3. The reaction is a contact allergic dermatitis due to the sunscreen
4. SPF 50+ sunscreen only allows 50 minutes in the sun, so it is not strong enough to prevent sunburn

Moh'd Terbi



Photo:Contributed by DermNetNZ

Answer: 1 - A blood test will likely reveal increased protoporphyrins

Explanations:

- Erythropoietic protoporphyria (EPP) is an inherited metabolic disease due to a deficiency of ferrochelatase. This results in a build-up of cutaneous protoporphyrin, which causes an excessive sunburn-like reaction on exposure to sunlight.
- Abnormal levels of protoporphyrins are found in the blood and feces. Unlike the more common porphyria cutanea tarda, urinary and fecal uroporphyrin, and coproporphyrin are normal.
- Symptoms commence within a few minutes of exposure to the sun in EPP, unlike contact dermatitis which takes hours to days to develop. They persist for days or weeks in EPP, unlike solar urticaria which settles within an hour of covering up or going indoors.
- Very high sun protection factor sunscreens (SPF 50+) provide some broad spectrum cover for patients with EPP and may allow longer outdoors before symptoms begin. However, they do not protect well against visible light; the main cause of symptoms in EPP, so severely affected patients are advised to wear a hat, gloves, and covering footwear when outdoors.

Mohd Tariq

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Research Concepts:

Erythropoietic Protoporphyria



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Moh'd Terbi

Question 9: A male patient presents with an asymptomatic hyperpigmented patch of about 15 centimeters over his right shoulder, extending to the right upper arm. The lesion was first noticed 2 years ago and has been gradually increasing in size. A skin biopsy shows acanthosis, mild hyperkeratosis, increase pigmentation in the basal layer, and increased follicular units. What condition may be associated with this diagnosis?

Choices:

1. Accessory scrotum
2. Cataracts
3. Fibrous dysplasia
4. Subungual fibromas



Photo:Contributed by DermNetNZ

Answer: 1 - Accessory scrotum

Explanations:

- The diagnosis is Becker melanosis. It is a rare disease that primarily occurs in the peripubertal period, more commonly in males than females.
- Becker melanosis may be associated with other findings related to ectodermal abnormalities and is known as Becker nevus syndrome.
- Smooth muscle hamartomas, ipsilateral hypoplasia of the breast, pectoral muscle, and fat, limb hypertrophy, adrenal gland hyperplasia, and accessory scrotum can be seen in Becker nevus syndrome.
- Both conditions are considered sporadic but congenital and familial cases have been reported.

Mohd Terbi

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Research Concepts:

Becker Melanosis




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Question 10: A 16-year-old female presents to the emergency department with an acute onset of shortness of breath, chest tightness, and wheezing that has not responded to her inhalers at home for over 4 hours. She has a past medical history of asthma. She is using accessory muscles to breathe and can only speak in one or two words. The difference in systolic blood pressure between inspiration and expiration is 10%. She needs 2 liters of oxygen to maintain saturation at 94%. She is diffusely wheezing but does not have any secretions. She is started on albuterol and ipratropium nebulizer treatment and is given an intravenous dose of methylprednisolone. What is the next best step in the management of this patient?

Choices:

1. Heliox with 40:60 parts of helium and oxygen
2. Bi-level positive airway pressure support
3. Intravenous magnesium sulfate
4. Continue current management and reassess in 1 hour

Mon'd Terbi

Answer: 4 - Continue current management and reassess in 1 hour

Explanations:

- Short-acting inhaled beta-agonists are the drug of choice in acute asthma exacerbations. Anticholinergics have a variable response in acute asthma exacerbation with a somewhat underwhelming bronchodilatory role. However, they can be useful in patients with bronchospasm induced by beta-blockade or severe underlying obstructive disease with FEV1 less than 25% predicted.
- Most available data support a distinct benefit of corticosteroids in status asthmaticus in an emergency setting. At a physiologic level, corticosteroids reduce airway inflammation and mucus production and potentiate beta-agonist activity in smooth muscles and reduce beta-agonist-induced tachyphylaxis in patients with severe asthma.
- As such, this patient has been started on appropriate initial therapy and should be monitored for response prior to escalating therapy or providing ventilatory support.
- Magnesium inhibits calcium-mediated smooth muscle constriction, decreases acetylcholine release in the neuromuscular junction, and affects respiratory muscle force generation. Intravenous magnesium sulfate has therefore been a useful adjunct in patients with acute status asthmaticus refractory to beta-agonists. There is a demonstrated reduction in pulsus paradoxus and enhancement in peak flow with the use of Heliox. However, its routine use is hindered by the prohibitive cost, infrequent indication, and need for recalibration of gas blenders and flow meters when used with mechanical ventilation.

Moni Terry

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Research Concepts:

Status Asthmaticus

StatPearls Knowledge Base

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Moh'd Terbi

Question 11: A 16-year-old female presents with anorexia, weight loss, hyperpigmentation, bowel changes, and lightheadedness on standing. She states her symptoms are progressive and developed one month ago. The cosyntropin stimulation test shows random serum cortisol of 11 micrograms/dL. Serum cortisol 1 hour after administering 0.25 mg cosyntropin is 14 micrograms/dL. Aldosterone level is 10 ng/dL. Which of the following is an appropriate treatment option for this patient?

Choices:

1. Hydrocortisone 15 mg daily for life
2. Prednisone 5 mg daily for life
3. Hydrocortisone 15 mg and fludrocortisone 0.1 mg daily for life
4. Prednisone 60 mg daily tapering to 10 mg a day and fludrocortisone 0.1 mg daily for life

Moh'd Terbi

Answer: 3 - Hydrocortisone 15 mg and fludrocortisone 0.1 mg daily for life

Explanations:

- The patient has primary adrenal insufficiency and requires both glucocorticoid and mineralocorticoid replacement.
- Either hydrocortisone 15 mg or prednisone 5 mg daily can be used. Mineralocorticoid replacement is with fludrocortisone 0.1 mg daily.
- Patients with adrenal insufficiency often present with hypotension, altered mental status, anorexia, vomiting, weight loss, fatigue, and recurrent abdominal pain. Salt craving and orthostatic hypotension are common in patients with primary adrenal insufficiency, due to the volume depletion from the reduced mineralocorticoid function.
- If the patient has additional stress from surgery or infection, higher doses of glucocorticoids may be needed.

Wahid Terbi

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Research Concepts:

Adrenal Insufficiency




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Question 12: A mother brings her 10-year-old son to the emergency room for evaluation. He has a history of spina bifida requiring repair at birth and subsequent shunt placement. The child complains of increased pain in the legs, disturbed gait, and increased scoliosis. Which of the following clinic feature can also be associated with the neurological complication this child is experiencing?

Choices:

1. Worsening bowel and bladder function
2. Hypotonia
3. Facial weakness
4. Neck rigidity

Moh'd Terbi

Answer: 1 - Worsening bowel and bladder function

Explanations:

- The child in this vignette is experiencing a well-known complication of spina bifida, a tethered cord.
- These patients present with pain in back and legs, increased spasticity, worsening of gait, increased scoliosis, and problems with bowel and bladder function.
- Providers should have a high index of suspicion for this complication in patients with a history of spina bifida.
- Facial weakness is not a complication of spina bifida. Neck rigidity may be seen with meningitis.

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Moh'd Terbi

Research Concepts:

Meningomyelocele




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Question 13: An 8-year-old child with Down syndrome presents to the emergency department with decreased neck movements three days following an adenoidectomy and tonsillectomy. On examination, he is not in distress. He is afebrile and able to speak normally. His oral intake has been limited to small amounts of clear liquids. He is uncooperative, and so Kernig and Brudzinski signs cannot be assessed. What is the most likely diagnosis?

Choices:

1. Eagle syndrome
2. Atlanto-axial subluxation
3. Velopharyngeal insufficiency
4. Meningitis

Moh'd Terbi

Answer: 2 - Atlanto-axial subluxation

Explanations:

- Atlanto-axial subluxation (Grisel syndrome) is a rare but extremely important complication of adenoidectomy that carries significant morbidity if not promptly recognized and treated.
- Although its pathogenesis is not fully understood, one widely accepted hypothesis is that the spread of infection from the posterior pharynx through the periodontoid venous plexus produces pathological laxity of the supporting atlantoaxial ligaments. This ultimately leads to atlantoaxial joint instability and subluxation.
- Risk factors include pre-existing atlantoaxial instability, more commonly seen in individuals with Down syndrome, and excessive use of monopolar suction diathermy.
- Severity is graded using the Fielding classification with stepwise management ranging from bedrest and analgesia to immobilization and neurosurgical intervention. A neurosurgical opinion must always be sought.

Mohsen Terbi

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Research Concepts:

Adenoidectomy




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Question 14: A newborn infant is diagnosed with HIV and started on highly active antiretroviral therapy (HAART). The infant is evaluated, and the mother admits that she stopped the medication two months ago because she kept missing doses. Laboratory results show a CD4+ count of 300 cells/mm3 and an HIV viral load of 50,000 copies/mL. Previously the CD4+ count was 700 cells/mm3, and the HIV viral load was 6,000 copies/mL. Which of the following is appropriate for the management of this infant?

Choices:

1. The mother should be reprimanded because now the treatment will be more difficult.
2. Continued HAART will not be helpful, given the low CD4+ count.
3. It is better not to take HAART if compliance cannot be assured.
4. Continuing the medication, even with questionable compliance, would have been preferable.

Moh'd Terbi

Answer: 3 - It is better not to take HAART if compliance cannot be assured.

Explanations:

- Highly active antiretroviral therapy (HAART) can become quickly ineffective if not taken regularly.
- There is more likely to be a more rapid progression in patients who frequently miss doses.
- Poor compliance can result in multidrug resistance, making effective therapy difficult.
- To improve compliance, the dosing should be simplified, and more flexible appointments should be made with the patient. Patients should be assisted with transportation, and counseling should be recommended to overcome stigma and any mental health disorder.

Mohd Terbi

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Research Concepts:

HIV Antiretroviral Therapy




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Question 15: A 17-year-old female was brought to the emergency department by her father after she had ingested around 20 tablets of his "heart failure" medication as an act of self-harm. She appeared lethargic, complaining of abdominal pain, vomiting and colored halos in her vision. Vital signs showed heart rate of 40/min, blood pressure of 90/60 mmHg, respiratory rate of 18/min, EKG showed complete heart block with frequent premature ventricular complexes. Labs showed hyperkalemia. Which of the following is the mechanism of toxicity of the medication involved?

Choices:

1. Blocks reuptake of serotonin
2. Inactivates acetylcholine esterase
3. Inactivates sodium-potassium ATPase activity
4. Uncoupling of oxidative phosphorylation

Moh'd Terbi

Answer: 3 - Inactivates sodium-potassium ATPase activity

Explanations:

- Cardiac glycosides inactivate sodium-potassium ATPase activity, which is responsible for its cardiotoxic effect.
- Inactivation of sodium-potassium ATPase activity leads to accumulation of potassium in the extracellular compartment. Studies have shown that hyperkalemia is a poor prognostic marker of digoxin toxicity.
- Cardiac glycosides decrease the duration of the refractory period which increases the risk of automaticity and arrhythmias.
- Cardiac glycosides also increase the vagal tone at sinoatrial and atrioventricular nodes leading to ECG abnormalities of bradycardia and bradydysrhythmias. The increased excitability of the myocardium can lead to simultaneous Premature ventricular complexes as in this case.

Wahid Tarbi

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Research Concepts:

Cardioactive Steroid Toxicity




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Question 16: An asymptomatic 14-year-old female patient presents for follow-up of anemia diagnosed during routine bloodwork. Her hemoglobin level is 10 g/dL. Serum lactate dehydrogenase (LDH) and indirect bilirubin are elevated. Haptoglobin levels are reduced. She has a positive family history of anemia. She is diagnosed with a disease associated with ankyrin deficiency, which of the following is a confirmatory test for her most likely underlying diagnosis?

Choices:

1. Peripheral blood smear
2. Glycerol lysis test
3. Bone marrow biopsy
4. Direct Coombs

Moh'd Terbi

Answer: 2 - Glycerol lysis test

Explanations:

- This patient has hereditary spherocytosis, this disease may be caused by deficiencies in ankyrin and spectrin deficiencies which are proteins responsible for mechanical coupling between the cytoskeleton and the RBC plasma membrane.
- Confirmatory tests for hereditary spherocytosis include EMA (eosin-5-maleimide) binding, osmotic fragility, glycerol lysis, and cryohemolysis.
- Genetic testing may also be used for confirmation of hereditary spherocytosis in patients with negative or equivocal testing with EMA, in whom suspicion is high.
- While peripheral blood smear is part of the diagnostic workup it is not a confirmatory test.

Mohd Terbi

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Research Concepts:

Hereditary Spherocytosis




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Question 17: A 17-year-old girl presents to your out-patient clinic for fatigue, fever, sore throat, and cough. Her vital signs reveal an oral temperature of 100.5, a blood pressure of 110/70 mmHg, heart rate of 98 bpm, and a respiratory rate of 18/minute. Examination shows erythema and exudates of the pharynx and tonsils, as well as enlarged submandibular lymph nodes. She is prescribed amoxicillin for suspected strep pharyngitis. Four days later the patient returns to clinic for development of a maculopapular rash. She has no other systemic symptoms, and her rash does not itch. Follow-up of her laboratory results reveals a positive Monospot test and a negative bacterial culture of her throat. What is the most likely etiology of the rash?

Choices:

1. Viral exanthem
2. Type 4 mediated hypersensitivity reaction
3. IgE mediated hypersensitivity to amoxicillin
4. Stevens-Johnson syndrome

Mehdi Terbi

Answer: 2 - Type 4 mediated hypersensitivity reaction

Explanations:

- Type 4 mediated hypersensitivity is a delayed immune-mediated reaction to an offending drug.
- Delayed hypersensitivity is very common in patients receiving amoxicillin while infected with Epstein-Barr virus.
- Urticaria is more common in Type 1 hypersensitivity reactions, and much less common in delayed immune-mediated skin reactions.
- Type 1 hypersensitivity reactions tend to be more raised with erythema and pruritis, also known as urticarial.

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Moh'd Terbi

Research Concepts:

Amoxicillin




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Question 18: A 1 years old baby was brought with symptoms of progressive breathlessness for the last 4-5 months during breastfeeding. His symptoms are significantly increased for the last one week. On examination, the baby was in cardiogenic shock. He was started on inotropes and other medications for heart failure. But despite all treatment measures, the baby succumbed to death after one day. The autopsy showed enlarged LV with a glistening white outflow tract. The following correlates best with the underlying condition?

Choices:

1. It does not have a genetic association
2. Altered structure of deposited elastic fibers seen
3. There is increased thickness of the myocardium due to deposition of the collagen and elastin fibers
4. Dilated and contracted forms maybe there

Mon'd Terbi

Answer: 4 - Dilated and contracted forms maybe there

Explanations:

- Endocardial fibroelastosis (EFE) is primarily a disease of infants and children, but can rarely present in adulthood as well. The primary form may be idiopathic or may have a genetic inheritance, most notably X linked recessive.
- Endocardium and subendocardium show evidence of invasion by fibroelastic tissue and that is because of the synthesis of abnormally large amounts of collagen and elastin in the subendocardial layer and not the qualitative defect in the structure of elastic fibers.
- Myocardial thickness is within the normal range.
- Dilated and contracted forms may be there but the dilated form is more common.

Mohd Terbi

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Research Concepts:

Endocardial Fibroelastosis




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Question 19: A 10-year-old girl presents with complaints of weight loss, palpitations, diarrhea, and anxiety. She is found to have a blood pressure of 130/90 mmHg and a heart rate of 150 beats/min. She also complains of right hip pain, and her mother reports she has been walking with a limp. Skin examination most likely will reveal which of the following?

Choices:

1. Ash-leaf spot
2. Milia
3. Cafe-au-lait macule
4. Auspitz sign

Moh'd Terbi

Answer: 3 - Cafe-au-lait macule

Explanations:

- McCune-Albright syndrome is characterized by endocrinopathy, fibrous dysplasia, and cafe-au-lait macules.
- Hyperthyroidism is a common endocrinopathy in patients with McCune-Albright syndrome.
- Clinical symptoms of hyperthyroidism are weight loss, palpitations, diarrhea, and anxiety.
- Fibrous dysplastic lesions may present with bone pain.

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Research Concepts:

Moh'd Terbi

McCune Albright Syndrome




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Question 20: A 16-month-old with sickle cell disease (HB SS disease) and adrenal insufficiency presents with a 2-day history of fever, progressive lethargy, and respiratory distress. On arrival, she is obtunded and has severe respiratory distress. Her vital signs include a heart rate of 170 bpm, blood pressure of 74/50 mmHg, a respiratory rate of 55 bpm, and oxygen saturation of 74% on room air. Two peripheral IVs are placed, labs drawn, and she is given two 20 cc/kg boluses of normal saline. After the saline boluses, her heart rate remains 170 bpm, and her blood pressure is unchanged. She is placed on 100% FiO2 via a nonrebreather, and her oxygen saturation increases to 84%. She requires intubation. Which medication should be avoided?

Choices:

1. Rocuronium
2. Etomidate
3. Succinylcholine
4. Ketamine

Moh'd Terbi

Answer: 2 - Etomidate

Explanations:

- The clinical scenario suggests adrenal insufficiency with septic shock unresponsive to multiple fluid boluses. Etomidate inhibits adrenal steroid production and should not be used in the setting of adrenal insufficiency.
- Adrenal insufficiency can present in multiple clinical scenarios. Sometimes it is known as would be the case in children with congenital adrenal hyperplasia. It should be suspected in cases where patients have been on long-term corticosteroid medications as in long-term use to treat collagen vascular disorders and nephrotic syndrome. It should also be considered in the case of hypotension and shock unresponsive to multiple fluid boluses.
- In some scenarios, opiate-like fentanyl may be an appropriate choice for premedication in preparation for endotracheal intubation. When hypotension is present, opiates can worsen the hypotension, making medications like etomidate and ketamine better options. In the scenario in the question, etomidate would not be a good choice since the hypotension may in part be due to adrenal insufficiency.
- In this setting, ketamine would be a good option to use for premedication. Ketamine increases blood pressure and does not inhibit adrenal steroid production, making it a good choice for premedication for intubation in the setting of sepsis. Its bronchodilatory effects may also help if there is a component of reactive airways disease.

Mohsen Tariq

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Research Concepts:

Tracheal Intubation Medications

StatPearls Knowledge Base

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Moh'd Terbi

Question 21: A 12-month-old boy is admitted for pneumonia. He had multiple episodes of bronchiolitis during infancy. Four months ago, he was in the intensive care unit for pneumococcal pneumonia. He also has a history of recurrent otitis media. His vaccinations are up to date. He appears frail and underweight. Temperature is 39.7 C, and blood pressure is 80/40 mmHg. Laboratory results show that his IgG is 220 mg/dL (normal, 700-1,500 mg/dL), IgA is 20 mg/dL (normal, 60-400 mg/dL) and IgM is 560 mg/dL (normal, 60-300 mg/dL). What is the most likely diagnosis?

Choices:

1. Bruton agammaglobulinemia
2. Hyper-IgM syndrome
3. Child abuse
4. Common variable immunodeficiency

Moh'd Terbi

Answer: 2 - Hyper-IgM syndrome

Explanations:

- Hyper-IgM syndrome is due to an X-linked genetic defect in the CD40 ligand.
- Patients with hyper-IgM syndrome have recurrent infections involving encapsulated bacteria.
- Treatment of hyper-IgM syndrome involves antibiotic prophylaxis and intravenous immunoglobulin.
- Common variable immunodeficiency usually presents in young adolescents with low levels of IgG, IgM, and IgA. Patients have a normal B lymphocyte count.

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Moh'd Terbi

Research Concepts:

Antibody Deficiency Disorder




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Question 22: A 5-year-old male is brought in with 5 days of fevers along with a rash, red eyes, and swelling of his hands and feet. He is admitted to the hospital to receive intravenous immunoglobulin (IVIG). Upon reviewing his allergies, it is noted he had an anaphylactic allergy to aspirin. What is the best treatment option for this child?

Choices:

1. Give the aspirin anyway
2. Ibuprofen 30 mg/kg/day divided Q6H
3. Dipyridamole 4 mg/kg divided Q8H
4. Prednisolone 2 mg/kg daily

Moh'd Terbi

Answer: 3 - Dipyridamole 4 mg/kg divided Q8H

Explanations:

- Clopidogrel (0.2 mg/kg daily) or dipyridamole are alternatives to aspirin in cases of severe allergy or during influenza or varicella illness to prevent Reye syndrome. Both of these can also be considered as treatment options for chronic antiplatelet treatment.
- High-dose aspirin is given to children with Kawasaki disease for both the antiplatelet and anti-inflammatory effects. A high dose should be given for 48 to 72 hours after the resolution of fever. Low dose therapy should continue for 6 to 8 weeks or until platelet counts and erythrocyte sedimentation rate are normal.
- High dose IVIG within the first ten days of illness decreases the incidence of coronary artery aneurysm formation to below 3%. During IVIG infusion, one should be prepared for infusion reaction and have medications at the bedside and consider pretreatment with diphenhydramine and/or corticosteroids.
- Corticosteroids are not currently recommended as part of initial therapy. However, there is some evidence they may improve the disease course and are useful in patients who are IVIG resistant.

Mohit Tarkar

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Research Concepts:

Kawasaki Disease



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Moh'd Terbi

Question 23: A 17-year-old female patient with a past medical history of Crohn disease and gastroesophageal reflux disease presents for an acute visit. The patient complains of generalized weakness, nausea, and muscle fasciculations, which have worsened over the past week. She had not found any alleviating or aggravating factor. Physical exam reveals a positive Chvostek sign. Current medications include omeprazole and ibuprofen. What electrolyte imbalance might be causing the patient's current symptoms?

Choices:

1. Hypomagnesia
2. Hypermagnesemia
3. Hyponatremia
4. Hypernatremia

Moh'd Terbi

Answer: 1 - Hypomagnesia

Explanations:

- Risk factors for developing hypomagnesemia include gastrointestinal disease, alcohol use disorder, and chronic diarrhea. Medications, such as proton pump inhibitors and diuretics can also be risk factors. This patient has Crohn disease while also taking a proton-pump inhibitor.
- Hypocalcemia is commonly seen with hypomagnesemia. If a patient is refractory to the treatment of hypocalcemia, magnesium levels should be checked.
- Symptoms of hypomagnesia typically occur due to concurrent hypocalcemia. Signs and symptoms include Trousseau sign, Chvostek sign, hyperreflexia, and tremor.
- Severe hypomagnesia, less than 1.12 mg/dl, can result in generalized tonic-clonic seizures.

Mon'd Terbi

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Research Concepts:

Magnesium




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Question 24: A 2-month-old female is brought to the clinic by her mother for a routine visit. She is breast milk and formula fed. At her last visit, her weight was the 5th percentile for age. Today, she has gained minimal weight since the last visit, and her weight percentile is now less than the 1st percentile. Which of the following is most concerning for an organic etiology of her poor weight gain?

Choices:

1. Mother recently went back to work
2. The family switched from pre-mixed formula to powder formula that they mix themselves
3. Stools are infrequent, usually every other day
4. The patient is tachypneic during feeds

Moh'd Terbi

Answer: 4 - The patient is tachypneic during feeds

Explanations:

- This patient meets the diagnosis of failure to thrive. Etiologies are often multi-factorial and can include both organic and inorganic causes for inadequate calories to promote weight gain.
- Organic etiologies of failure to thrive can be thought of in three large categories: inadequate caloric intake, increased caloric output, and increased metabolic demand. Inadequate intake may be related to anatomic abnormalities of the esophagus or oropharynx. The increased output may be related to chronic diarrhea or emesis. Increased metabolic demand is often related to chronic illnesses such as congenital heart disease, kidney disease, or liver dysfunction.
- Tachypnea with feeds is a red flag. It is often associated with congenital heart disease which can be an organic etiology of failure to thrive due to increased metabolic demand.
- Given the concern for congenital heart disease in this patient, further evaluation and cardiology specific workup is warranted. However, it is important to remember that inorganic causes of failure to thrive can also be present in the setting of congenital heart disease. Assessing for inappropriate mixing of formula, psycho-social stressors such as mom's return to work and other etiologies of poor caloric intake are also important.

Moni's Tariq

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Research Concepts:

Failure To Thrive

StatPearls Knowledge Base

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Moh'd Terbi

Question 25: An 11-year-old girl has had intermittent microscopic hematuria for nine months. She has no other symptoms and has not yet reached menarche. Family history is noncontributory. Urinalysis shows 25 RBC/HPF without RBC casts. The rest of the urinalysis is normal as is serum complement levels and creatinine. Urine calcium to creatinine ratio is normal. Abdominal and pelvic ultrasound is normal. What is the next best step in management?

Choices:

1. Cystoscopy
2. CT of the abdomen
3. Renal biopsy
4. Observation

Moh'd Terbi

Answer: 4 - Observation

Explanations:

- It may be reasonable to observe asymptotic intermittent hematuria with stable renal parameters and without proteinuria and initial negative workup.
- Sometimes strenuous exercise can cause intermittent hematuria. The patient should be educated to create an activity log to compare with the episodes when blood is found in urine.
- Abnormal renal functions and significant proteinuria are indications for a kidney biopsy.
- Abominopelvic CT and cystoscopy are indicated when urological causes of hematuria are suspected.

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Moh'd Terbi

Research Concepts:

Hematuria




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Question 26: A 13-year-old girl presents for evaluation of a urinary tract infection, fever, and vomiting. She was brought in by her grandfather who states he is the custodial parent. She has visited the office twice before for urinary tract infections in the past six months. After advising the grandfather that you will call with any positive culture results and need to change the antibiotic regimen, the grandfather provides you a phone number. During your evaluation of this girl, the grandfather insists on being present. She avoids eye contact and seems fearful. The grandfather informs you she is just shy and is "afraid of doctors." Provider intuition or a "gut feeling" arises and you ignore it. The grandfather never allows you an opportunity to examine the minor in private. Three days later, the lab calls with urine culture results, and you need to change the antibiotic. Your staff calls the phone number provided by the grandfather, and it is a wrong phone number. As a provider, her condition can worsen without appropriate follow up, and antibiotic change which is concerning. You feel that something was just not right. How should you proceed?

Med'd Terbi

Choices:

1. Follow your protocol for suspected cases of child abuse or neglect
2. Follow the human trafficking protocol in place for potential victims of human trafficking
3. Follow mandatory reporting guidelines for suspected cases of abuse or neglect
4. All are appropriate steps

Answer: 4 - All are appropriate steps

Explanations:

- Minors who present with frequent urinary tract infections may be victims of sexual abuse. The Health Insurance Portability and Accountability Act (HIPAA) permits the release of protected health information if injury or abuse suspected in children. Mandatory reporting requirements may vary by state and local statute and dependant on if a minor or adult.
- A human trafficking protocol should be pre-established with the involvement of a legal team to guide you further as these potential cases arise. The SOAR to Health and Wellness Training by the Office on Trafficking in Persons (OTIP) in partnership with the Department of Health and Humans Services Office on Women's Health (HHS) can provide training through the National Human Trafficking Training and Technical Assistance Center on protocol development and red flags or indicators of human trafficking.
- Potential red flags or indicators in this scenario are the fact that the "grandfather" would not leave the patient alone with the provider and that he provided a false phone number despite the healthcare provider stressing the importance of follow up and potential antibiotic change. The frequent visits to the office for genitourinary complaints should increase suspicion of abuse. The patient avoided eye contact and appeared fearful. Her actions were explained away by the "grandfather or trafficker." He controlled the situation.
- The means of exploitation, force, fraud or coercion, do not need to be present for a minor under the age of eighteen involved in any commercial sex act according to the Trafficking Victims Protection Act (TVPA) of 2000. Minors easily exploited and manipulated by traffickers, are protected under the TVPA.

Mohit Tenti

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Research Concepts:

Human Trafficking

StatPearls Knowledge Base

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Moh'd Terbi

Question 27: A 6-month-old child presents with poor growth and loose malodorous stools since birth. Stool studies are significant for an increased amount of fecal fat. Cystic fibrosis was initially considered, but the chloride sweat tests were negative. Celiac sprue was also suspected, and the child underwent esophagogastroduodenoscopy. Intestinal biopsy, however, revealed normal-appearing villi. What is the diagnosis?

Choices:

1. Gaucher disease
2. Citrullinemia
3. Abetalipoproteinemia
4. Porphyria

Moh'd Terbi

Answer: 3 - Abetalipoproteinemia

Explanations:

- Abetalipoproteinemia is an autosomal recessive disorder resulting in the absence of beta-lipoproteins in the plasma. This results in fat malabsorption due to failure to form chylomicrons in the intestine, failure to thrive, ataxia, retinitis pigmentosa, and acanthocytosis due to defective cell membranes.
- Upon biopsy, enterocytes appear normal, that is, not atrophied. However, there are vacuoles of unabsorbed fat in the cells.
- Gaucher disease is a lysosomal storage disease that presents with painless hepatosplenomegaly and bone disorders. There are glucocerebrosidase accumulations in the macrophages. Porphyria would present with diffuse abdominal pain, photosensitivity, and red-colored urine. Citrullinemia is a urea cycle disorder, marked by increases in ammonia in the blood. This results in a lack of appetite, vomiting, drowsiness, seizures, intolerance to protein, and coma.
- Abetalipoproteinemia manifests itself in infancy.

Mohit Tariq

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Research Concepts:

Abetalipoproteinemia




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Question 28: A 17-year-old African American male with no significant past medical history presents to her primary care provider's clinic with symptoms of palpitations. On physical examination, blood pressure is 111/74 mmHg, respiratory rate of 18/minute, and temperature of 98.1 F. After careful analyses of his electrocardiogram; it is determined that his rhythm is consistent with sinoatrial nodal reentrant tachycardia. What is the expected range of the heart rate in patients presenting with sinoatrial nodal reentrant tachycardia (SANRT)?

Choices:

1. 140 to 280 beats per minute
2. 100 to 150 beats per minute
3. Less than 60 beats per minute
4. Less than 40 beats per minute

Moh'd Terbi

Answer: 2 - 100 to 150 beats per minute

Explanations:

- The expected range of the heart rate in patients presenting with atrioventricular nodal reentrant tachycardia 140 to 280 bpm.
- The expected range of the heart rate in patients presenting with sinoatrial nodal reentrant tachycardia is 100 to 150 bpm.
- The expected range of the heart rate in patients presenting with sinus bradycardia is less than 60 bpm.
- The expected range of the heart rate in patients presenting with junctional bradycardia is less than 40 bpm.

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Moh'd Terdi

Research Concepts:

Sinoatrial Nodal Reentrant Tachycardia




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Question 29: A 12-year-old male presents to the emergency department with a new-onset headache and blurry vision for 6 hours. The patient denies a history of prior seizures. Past medical history includes a right-hand corrective surgery for polydactyly at eight months of age. The neurological examination reveals no abnormalities. CT head without contrast shows a mass in the suprasellar region. MRI of the brain further confirms the presence of a hypothalamic hamartoma. A rare genetic disorder is suspected. Which of the following best describes the patient's clinical syndrome?

Choices:

1. Pallister-Hall syndrome
2. Greig cephalopolysyndactyly syndrome
3. Oral-facial-digital syndrome
4. Acrocallosal syndrome

Moh'd Terbi

Answer: 1 - Pallister-Hall syndrome

Explanations:

- Hypothalamic hamartomas are associated with rare genetic disorders such as Pallister-Hall syndrome.
- Pallister-Hall syndrome is an autosomal dominant disorder caused by a mutation to the GLI3 gene which classically presents with hypothalamic hamartoma and polydactyly.
- Pallister-Hall syndrome is also associated with other abnormalities such as hypopituitarism, growth hormone deficiency, bifid epiglottis, and genital hypoplasia.
- Pallister-Hall syndrome is typically diagnosed in early childhood presenting with seizures, central precocious puberty due to hypothalamic hamartomas, and polydactyly.

Mahdi Terbi

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Research Concepts:

Aggression In Hypothalamic Hamartoma




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Question 30: A 5-year-old child with a past medical history of preterm birth and chronic infections presents to the clinic with his grandmother. She states that the child developed a fever of 103 F three days ago with defervescence of the fever last night. The child woke up with erythematous papules located on his trunk, extremities, and neck. Grandmother states the lesions do not appear to bother the child, and he has been acting normally at home. She states, "he is always sick." The child has taken no medications, and no other family members have the rash. What is the best course of treatment for this patient?

Choices:

1. The rash is usually self-limited
2. Begin oral antibiotics
3. Begin topical antibiotic ointment
4. Begin systemic antiviral therapy

Med'd Terbi

Answer: 1 - The rash is usually self-limited

Explanations:

- Roseola infantum is most commonly a self-limited disease.
- The fever should be treated with antipyretics and supportive care.
- It is important to obtain a thorough personal history to assess for any immunosuppression or history of chronic infections in patients with roseola infantum.
- Immunocompromised patients infected with roseola infantum can have more severe infections.

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Moh'd Terbi

Research Concepts:

Roseola Infantum




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Question 31: A 22-month-old male presents for evaluation of suspected egg allergy. He was delivered via c-section with no complications, he is up-to-date with all age appropriate vaccinations, and his past medical history is unremarkable other than a recent episode of “runny nose and cough.” Per the patient’s mother, the child “breaks out in a rash” anytime there is exposure to scrambled eggs, for which she uses an antihistamine. She denies any anaphylaxis episodes requiring a visit to the emergency department. A skin test is performed which demonstrated allergies to dust mites but no allergies to egg. Due to high clinical suspicion, serum egg-specific IgE levels are drawn and are elevated beyond the reference range. A follow up supervised oral food tolerance is performed, demonstrating egg allergy with no reported anaphylaxis. What is a likely cause of the initial false negative skin test?

Choices:

Moh'd Terbi

1. Preanalytic variables - error in skin test administration
2. The skin allergy test has a higher false negative rate that correlates with the age of the patient
3. The recent use of antihistamine can blunt the immune response in skin allergy testing
4. The patient has Job’s syndrome, explaining the elevated serum IgE levels

Answer: 3 - The recent use of antihistamine can blunt the immune response in skin allergy testing

Explanations:

- Recent antihistamine use can lead to false-negatives on an allergy skin test.
- Skin allergy testing involves the introduction of a suspected allergen along with positive (histamine) and negative (saline) controls. If a patient's serum contains egg-specific IgE antibodies, mast cell degranulation occurs in response to exposure to the allergen, prompting a wheal and flare response.
- Mast cell degranulation involves the release of heparin, histamine, chemotactic factors, and leukotrienes. Unlike cellular apoptosis, mast cell degranulation is physiologic and the cell does not truly undergo cell-programmed death.
- A wheal typically greater than 3 mm in diameter is considered a positive test in skin allergy testing.

Moh's Terbi

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Research Concepts:

Egg Allergy




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Question 32: A 13-year-old child is brought in by his mother because he is acting strangely. He has become "lazier" at school, and as a result, his grades have decreased. She believes he has been more depressed because he spends his free time sitting in his room and eating more than usual. On physical exam, his conjunctivae are injected, but there are no other pertinent findings. What is the best next step?

Choices:

1. Referral to a psychiatrist for depression
2. Urine drug screen
3. Call child protective services
4. Referral to ophthalmologist

Moh'd Terbi

Answer: 2 - Urine drug screen

Explanations:

- Cannabis intoxication is commonly associated with injected conjunctiva and a temporary increase in appetite.
- Cannabis use has also been shown to cause lethargy, impairment of attention, memory, executive functioning, and short-term memory, which can lead to problems in school for students.
- Chronic use may lead to long-term effects on cognitive performance, "amotivational syndrome," a loss of energy and will to work.
- Urine drug screen is the most efficient test to assess for THC toxicity, as positive results for THC have been reported up to 10 days after weekly use and up to 56 days after daily use.

Mohd Terbi

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Research Concepts:

Marijuana




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Question 33: A 5-year old is seen in the cardiology clinic with a high fever, irritability, and cough. Examination reveals an ill-looking child with tachycardia, hyperactive precordium, desquamative rash, a strawberry tongue, and generalized lymphadenopathy. The mother claims that the child has an upper respiratory tract infection one week prior to these symptoms. The child is started on treatment and appears to be responding well at 14 days. The initial echocardiogram did not reveal any pathology. According to the American Heart Association, when should the next echocardiogram be obtained?

Choices:

1. Every week for the first 6 weeks
2. 4 to 6 weeks after treatment
3. Only if patient has symptoms
4. After 4 to 6 months

Moh'd Terbi

Answer: 2 - 4 to 6 weeks after treatment

Explanations:

- The patient most likely has Kawasaki disease. After the initial echocardiogram, another one should be obtained within 10 to 14 days and again at 4 to 6 weeks after all the laboratory data have normalized.
- Echocardiograms may be required more frequently in high-risk patients who continue to have elevated laboratory parameters and appear clinically ill.
- If by 8 weeks, the child does not exhibit any coronary artery involvement, the follow-up echo should be done at 12 months.
- Some investigators are now using electron beam CT to look for coronary artery calcifications as a marker of future coronary artery events.

Mohd Terbi

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Research Concepts:

Kawasaki Disease




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Question 34: A 17-year-old farm worker was brought to the emergency department in a rural area with chief complaint of headache, blurry vision and abdominal cramps. Symptoms started about 2 hours ago after he returned from the farm. Physical examination is significant for copious oral and nasal secretion. Pupils are pinpoint bilaterally and sluggishly reactive to light. Breaths sound are coarse bilaterally with mild rhonchi. On auscultation of the abdomen, bowel sounds were hyperactive. Heart rate is 100 beats per minute, respiratory rate 20 breaths per minute, and blood pressure 131/88 mmHg. Which of the following tests would be best to diagnose the condition?

Choices:

1. Serum acetylcholine level
2. Red blood cell choline esterase activity
3. White blood cell choline esterase activity
4. Serum acetaminophen level

Med'd Terbi

Answer: 2 - Red blood cell choline esterase activity

Explanations:

- The patient is exhibiting signs of organophosphate poisoning with nicotinic and muscarinic toxidrome.
- Organophosphate poisoning causes the buildup of acetylcholine (ACh) in the synapses because of the inhibition of acetylcholine esterase (AChE).
- The accumulation of ACh leads to the overstimulation of muscarinic and nicotinic receptors. Muscarinic effects of ACh include miosis, blurry vision, nausea, vomiting, diarrhea, low lung compliance, bronchoconstriction, bronchorrhea, increased secretions in the tracheobronchial and gastrointestinal system, bradycardia, urinary frequency, and urgency. Nicotinic effects of ACh include voluntary muscle fasciculation and flaccid paralysis. Tachycardia may progress to bradycardia from the opposing effects of the stimulation of muscarinic and nicotinic receptors.
- The diagnosis can be established by checking the level of red blood cell choline esterase activity which is decreased in organophosphate poisoning. Plasma choline esterase activity can also be measured but is not as accurate as RBC choline esterase activity.

Monica Terlo

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Research Concepts:

Cholinergic Crisis



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Moh'd Terbi

Question 35: A 16-year-old boy who had been recovering from a flu-like illness presented to the emergency department with acutely worsening dyspnea at rest, dizziness, and lethargy for two days. He had a low-grade fever, and vitals at the time of presentation were as follows blood pressure 74/35 mmHg, heart rate 118/min, respiratory rate 36/min, and oxygen saturation of 89%. EKG showed sinus tachycardia, and labs were significant for elevated troponin and proBNP. He was started on inotropic support after a failed fluid challenge. An echocardiogram revealed a globally hypokinetic myocardium with severely reduced left ventricular ejection fraction (18%), normal ventricular dimensions, and slightly thickened left ventricular walls. An endomyocardial biopsy revealed multiple foci of CD3+ cell-rich infiltrates with widespread myocyte necrosis and interstitial edema. The patient underwent intubation and was placed on mechanical ventilation as he became more lethargic, but he continues to be hypotensive despite maximal inotropic support. What is the most appropriate next step?

Mon'd Terbi

Choices:

1. Implantable cardioverter-defibrillator (ICD)
2. Biventricular pacemaker/cardiac resynchronization therapy (CRT)
3. Left ventricle assist device (LVAD)
4. Cardiac transplantation

Answer: 3 - Left ventricle assist device (LVAD)

Explanations:

- Fulminant myocarditis occurs in children and young adults and is characterized by acute severe decompensation of cardiac function following a viral respiratory or gastrointestinal illness.
- It is seen on echocardiogram as a hypokinetic myocardium with normal left ventricular dimensions but a slightly thickened ventricular wall because of edema.
- It can resolve spontaneously but may require aggressive interventions like LVAD (mechanical circulatory support) during its active phase, which can improve cardiac output.
- Extracorporeal membranous oxygenation (ECMO) is a quicker and less expensive alternative for LVAD, which can be used as a bridge to recovery. However, it may not increase the cardiac output as much as an LVAD.

Wahid Tarbi

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Research Concepts:

Nonviral Myocarditis




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Question 36: A mother brings her 8-month-old son to the clinic to establish care. She states that they moved from Bangladesh last month. She is concerned about her son's poor feeding and lack of weight gain. She states that he is not interacting as much as she expects, as she sees her friend's children very active and playful. On physical exam, the patient has coarse facial features, an umbilical hernia, macroglossia, and large fontanelles. Which of the following could have been given to help prevent this condition?

Choices:

1. Vitamin A
2. Zinc
3. Iodine
4. Calcium

Moh'd Terbi

Answer: 3 - Iodine

Explanations:

- This patient's physical exam features and his mother moving from another country points towards a diagnosis of congenital hypothyroidism. This has become very uncommon in the United States due to iodine being present in salt; however, in the developing world, one of the most common causes of hypothyroidism is iodine deficiency. This patient's symptoms could have been prevented with adequate iodine intake.
- The most concerning morbidity associated with congenital hypothyroidism are neurological damage, which can become permanent if not treated appropriately.
- Congenital hypothyroidism also has been associated with defects of the heart, kidneys, urinary system, gastrointestinal tract, and skeleton.
- The majority of children are asymptomatic at birth because the maternal thyroid hormone crosses the placenta.

Moh'd Terbi

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Research Concepts:

Congenital Hypothyroidism




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Question 37: An 18-year-old male is brought in by emergency medical services with a presentation of confusion. He has dilated pupils, dry mucous membranes, blurry vision, tachycardia, and urinary retention. He begins to seize. Which of the following is the most likely medication he ingested in overdose?

Choices:

1. Acetaminophen
2. Doxylamine
3. Hydrocodone
4. Verapamil

Moh'd Terbi

Answer: 2 - Doxylamine

Explanations:

- Pharmacologically, doxylamine has antihistamine and anticholinergic effects.
- In overdose, doxylamine causes an anticholinergic toxidrome. Clinical signs and symptoms may progress to hallucinations, rhabdomyolysis, seizures, and death.
- The half-life of doxylamine is 10 to 12 hours, which may be increased in the elderly. The median lethal dose (LD50) is 50 to 500 mg/kg.
- The toxidrome for a doxylamine overdose is the same as a diphenhydramine overdose. An acetaminophen level must always be checked initially and at four hours, as these medications may be combined with acetaminophen in over-the-counter medications targeted at analgesia and insomnia.

Wilson'd Terbil

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Research Concepts:

Doxylamine




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Question 38: A 2-year-old male has an extensive pustular eruption that occurred 3 weeks ago along the margins of erythematous patches in his inguinal region. What is the most likely diagnosis?

Choices:

1. Generalized pustular psoriasis
2. Pruritic urticarial papules and plaques
3. Chronic bullous disease of childhood
4. Toxic epidermal necrolysis

Moh'd Terbi

Answer: 1 - Generalized pustular psoriasis

Explanations:

- Generalized pustular psoriasis is a rare pustular eruption that forms along the margins of erythematous patches.
- Generalized pustular psoriasis can occur in infancy and early childhood. The most common age of onset is between 2 and 10 years of age.
- Generalized pustular psoriasis is characterized by recurrent, acute flares. The skin becomes dry, fiery red, and tender. Within hours, 2- to 3-millimeter pustules appear, and after a day, the small pustules coalesce to form pustular lakes. These dry out and peel to leave a glazed smooth surface where new crops of pustules appear. Pustules appear in crops and erupt every few days or weeks.
- Flares of generalized pustular psoriasis may result in chills, fever, headache, tachycardia, decreased appetite, nausea, vomiting, and muscle weakness. Remission may occur within days or weeks, and the skin eventually reverts to its previous state or erythroderma may develop. Relapses are common.

Moh'd Tariq

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Research Concepts:

Generalized Pustular Psoriasis




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improvement.

Moh'd Terbi

Question 39: A 2-day-old male is brought in by his parents after he is found to have an abnormal newborn screen with a normal thyroid stimulating hormone (TSH) and a low T4. His body mass index and weight are above the 97th percentile, and his height is in the 80th percentile. His heart rate is 86 beats per minute, and his blood pressure is 117/80 mmHg. He has no history of temperature intolerance, fatigue, constipation, dry skin, or diarrhea. He is found to have an X-linked disorder. Which of the following lab results would suggest the diagnosis of this patient?

Choices:

1. Low free T4
2. Normal free T4
3. High total T4
4. Low T3

Moh'd Terbi

Answer: 2 - Normal free T4

Explanations:

- Thyroxine-binding globulin (TBG) is a serine protease inhibitor produced in the liver. It belongs to the SERPINA7 family. The encoding gene for this protein is on the long arm of the X chromosome and as such, inherited forms of TBG tend to follow an X-linked pattern.
- The patient may have an abnormal newborn screen since the cut-off is usually determined by either the TSH level or the total T4. This may be one of the ways in which TBG deficiency is initially picked up.
- A decrease in TBG may cause an increase initially in free T4, which then negatively inhibits TSH. This causes a decrease in total T4 while free T4 stays stable in serum and thus has no metabolic consequences.
- A normal free T4 with a decreased total T4 and normal TSH is suggestive of TBG deficiency.

Mohit Terbi

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Research Concepts:

Thyroxine-Binding Globulin Deficiency




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Question 40: A 4-month-old female is brought to the emergency department after stopping breathing for about 30 seconds. The mother reports her lips became blue and she didn't resume breathing until she blew in her face. The patient had no symptoms before the event. She is breastfed and has had all immunizations. On exam, the patient is irritable and alert. Oxygen saturation is 97% on room air. The rest of the exam is normal. Which of the following is appropriate management?

Choices:

1. Hospitalize infant for workup
2. Discharge home with arrangement to get an EEG
3. Brief period of observation in the emergency department
4. Discharge home with an apnea monitor

Moh'd Terbi

Answer: 3 - Brief period of observation in the emergency department

Explanations:

- The infant has had an episode of brief resolved unexplained event (BRUE) formerly known as apparent life-threatening event (ALTE).
- Infants with low-risk BRUE do not require hospitalization, but a period of observation in the emergency department is warranted.
- This would help to reassure the family and can also help identify a more serious cause if the infant develops other symptoms.
- Apnea monitors are not recommended in these events as they increase family anxiety and have not shown to improve any outcomes, even among patients previously categorized to have ALTE.

Mohd Terbi

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Research Concepts:

Brief Resolved Unexplained Event




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Question 41: A 16-year-old female patient with no history of chronic illness presents with swollen hands and eyes and shortness of breath that started a week earlier. She has been passing only a small amount of urine over the last week. She suffered from a sore throat three weeks earlier, for which she completed the course of antibiotics with a significant response. On examination, her blood pressure is 165/95 mmHg. Urine analysis showed microscopic hematuria and +2 proteinuria. The pertinent laboratory data revealed a normal complete blood count with differential. A basic metabolic panel shows sodium 132 mEq/L, potassium 6.6 mEq/L, chloride 101 mEq/L, bicarbonate 18 mEq/L, and creatinine 3.5 mg/dL. Complement (C3) levels were low at 50 U/mL. The patient did not respond to diuretic therapy. What is the next best step in the management of this patient?

Choices:

Mohsin Terbi

1. Continue diuretics and add antihypertensive medication
2. Perform urgent dialysis
3. Start immunosuppressive therapy
4. Restrict fluid intake

Answer: 2 - Perform urgent dialysis

Explanations:

- This patient most probably has post-streptococcal glomerulonephritis (PSGN). Usually, patients with post-streptococcal glomerulonephritis are prescribed symptomatic treatment until the condition resolves spontaneously.
- However, in this patient, whose potassium and creatinine levels are critically high, and failure to respond to the medical therapy would warrant urgent dialysis.
- Complement 3 (C3) levels are low in PSGN, and the appearance of electron-dense humps by electron microscopy is characteristic of post-streptococcal glomerulonephritis.
- PSGN is a self-limiting condition in most cases, and thus, only symptomatic treatment is needed. Supportive treatment aims at controlling the complications of volume overload, such as hypertension and edema, which are prominent during the acute phase of the disease.

Wahid Terbi

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Research Concepts:

Poststreptococcal Glomerulonephritis




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Question 42: A 13-year-old male begins inhaled corticosteroid therapy for mild persistent asthma. During the office visit, he is counseled on proper inhaler technique. He also is advised to rinse his mouth and throat with water after each use, expectorating the rinsate. This is intended to prevent overgrowth by which of the following organisms?

Choices:

1. Blastomyces dermatitidis
2. Candida albicans
3. Histoplasma capsulatum
4. Pneumocystis jirovecii

Moh'd Terbi

Answer: 2 - Candida albicans

Explanations:

- Oral thrush or candidiasis, caused by Candida overgrowth, is a common local adverse effect associated with inhaled corticosteroids.
- Effects of local deposition in the oropharynx and larynx include oral thrush, dysphonia, cough, and throat irritation. Systemic effects result from ingestion as well as absorption from the lung.
- The majority of inhaled corticosteroid doses delivered by metered dose inhalers are deposited in the oropharynx. This drug can then be swallowed, undergo first-pass metabolism, and enter the systemic circulation. Methods to reduce the amount of drug being ingested include rinsing the mouth after each use, using a spacer, and proper technique. Dry powder inhalers have reduced deposition in the oropharynx and larynx.
- In addition to prevention of oral thrush, rinsing the mouth after each use of inhaled corticosteroids can reduce systemic adverse effects.

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Research Concepts:

Inhaled Corticosteroids




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Question 43: A patient with acne keloidalis nuchae presents for an initial visit. The exam reveals a large fibrotic plaque on the posterior neck with multiple pustules and pronounced drainage. What is the most appropriate initial treatment?

Choices:

1. Antibiotics
2. Potent topical corticosteroids
3. Intralesional injections of triamcinolone
4. Cryotherapy

Moh'd Terbi

Answer: 1 - Antibiotics

Explanations:

- Acne keloidalis nuchae (AKN) frequently can be complicated by foreign body reaction and superinfection due to entrapped hairs. This generally responds to cephalosporins and dicloxacillin, although the efficacy of antibiotics in this setting may be more related to their anti-inflammatory rather than their antibacterial effects.
- Intralesional triamcinolone's fibrinolytic effects reduce keloid formation and can cause shrinkage of AKN. However, the use of intralesional steroids should be preceded by infection control.
- AKN usually occurs on the scalp or posterior neck and is almost exclusively seen in young males of color. It is believed that the cause is chronic skin irritation.
- The key to successful treatment is patient education. This means avoiding short haircuts and close shaving. In addition, they should avoid wearing tight collared shirts and headgear.

Mohsen Terbi

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Research Concepts:

Acne Keloidalis Nuchae




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Question 44: An 8-year-old female is brought to the emergency department with a diffuse rash and joint pain of several days' duration. The patient's father notes she had a sore throat approximately three weeks ago with fevers and was diagnosed with Strep throat. On exam, a patchy rash is noted on the patient's trunk and limbs with a circular appearance. Multiple subcutaneous nodules are also palpated. Vitals signs show a temperature 101.3 F and pulse 192/min. Which of the following is most likely to accompany the patient's presentation?

Choices:

1. Carditis
2. Bacteremia
3. Encephalitis
4. Intussusception

Moh'd Terbi

Answer: 1 - Carditis

Explanations:

- The patient in the question is presenting with rheumatic fever.
- Rheumatic fever is a rare complication of untreated Group A Strep pharyngitis.
- First-line treatment for Group A Strep pharyngitis is penicillin.
- Carditis is a complication of rheumatic fever.

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Research Concepts:

Tonsillitis

Moh'd Terbi




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Question 45: A 17-year-old female presents with a 3-day history of itching, burning, crusting, and matting of her eyelids bilaterally which is worse in the morning when she awakens. The patient has no prior history of a similar event. On physical exam, there is crusting of the eyelashes at the bases, erythema of the eyelids, clear conjunctiva, and cornea. There are small ulcers on the eyelid margins. The meibomian glands appear normal. Which of the following is not first-line treatment?

Choices:

1. Warm compresses and lid margin scrubs with a cotton swab dipped in diluted baby shampoo
2. Avoidance of eye makeup
3. Erythromycin ophthalmic ointment
4. Oral doxycycline

Moh'd Terbi

Answer: 4 - Oral doxycycline

Explanations:

- The patient's symptoms are acute. The likely diagnosis is acute blepharitis.
- Ulcerations of eyelid margins are indicative of an infectious cause of the symptoms. The likely causes are Staphylococcus and viral causes. Acute blepharitis should always be treated with topical antibiotics.
- All types of blepharitis should be treated with eyelid hygiene and avoidance of potential triggers.
- Oral doxycycline is reserved for the treatment of posterior blepharitis that is not responsive to eyelid hygiene.

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Moh'd Terbi

Research Concepts:

Blepharitis




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Question 46: A 2-year-old female with a short neck, simian crease, small chin, and flat nasal bridge presents to your clinic with a large murmur best heard at the second intercostal space. Her mother is worried that her child has an atrial septal defect. What other congenital defect would be expected in this patient?

Choices:

1. Atrioventricular septal defect
2. Coarctation of the aorta
3. Tricuspid atresia
4. Patent ductus arteriosus

Moh'd Terbi

Answer: 1 - Atrioventricular septal defect

Explanations:

- Atrial septal defect (ASD) murmurs can best be heard at the second intercostal space.
- ASDs can be found in patients with Noonan syndrome, Treacher-Collins syndrome, Turner syndrome, Down syndrome and thrombocytopenia-absent radii syndrome.
- Down syndrome is associated with endocardial cushion defects and can present with atrioventricular septal defects.
- Ostium primum defects are commonly associated with atrioventricular septal defects based on the close proximity to the endocardial cushions.

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Research Concepts:

Atrial Septal Defect




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Question 47: A pediatric provider is called to assess a newborn for increased irritability. On arrival, she notes that the infant is crying incessantly and is quite irritable. Upon obtaining a full history, she is told that the mother is a 40-year-old pre-gestational diabetic with poorly controlled glucose levels during late pregnancy. The delivery was complicated by shoulder dystocia, and the obstetrician used special maneuvers to deliver the shoulders. On gross examination, the infant appears macrosomic. On performing the Moro reflex, there is a decreased movement on the left side. Crepitus is palpated on the left upper mid-clavicular region with a deformity. Which one of the following should be communicated to the family concerning the newborn?

Choices:

1. "The infant will require surgical intervention"
2. "Displaced clavicular fractures heal with a resultant deformity"
3. Provide reassurance and observe
4. "The arm needs to be immobilized"

Allen'a Terbi

Answer: 4 - "The arm needs to be immobilized"

Explanations:

- The infant in this vignette likely has a displaced clavicular fracture, which can be confirmed using a plain radiograph. Clavicular fractures in newborns are known to heal well, usually without requiring surgical intervention.
- Even significantly displaced clavicular fractures can heal well without deformity as long as the affected arm is immobilized. The infants are irritable from pain and discomfort until the arm is immobilized.
- Displaced clavicular fractures require immobilization using a sling, or pinning the sleeve of the affected arm to the shirt. Furthermore, a small percentage of infants with a clavicular fracture may present with brachial plexus injury, which might not be apparent right away. It is essential to assess for possible brachial plexus injury in this situation. Reassurance is acceptable only after providing supportive care by immobilizing the arm.
- Clavicular fractures in newborns heal rapidly requiring no special interventions. However, the affected arm needs to be immobilized to promote the union of fractured bone ends. This can be achieved by pinning the sleeve of the affected limb to the front of the shirt to decrease arm movement. Even severely displaced fractures of the clavicle heal well in the newborns without deformity. Surgical interventions are only reserved in extreme cases with severe rotational deformity, non-union with conservative management, or comminuted fractures, which are not routinely seen in the newborn. Also, brachial plexus injuries may be associated with clavicle fractures presenting with temporary or long-lasting weakness on the affected side. The pathogenesis of brachial plexus injury in this situation is suggested to be due to either simultaneous injury, or due to entrapment of the nerves into the healing callus at the clavicle.

Mohsen Tehbi

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Research Concepts:

Birth Trauma

StatPearls Knowledge Base

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Moh'd Terbi

Question 48: A 17-year-old male presents with complaints of fever, sore muscles, and facial pain. He had recently returned from a trip to Alaska. After a physical exam, the patient is diagnosed with the flu and given oseltamivir and levofloxacin. Two weeks later, the patient returns to the clinic with persisting fever, facial pain, sore muscles, and new-onset abdominal pain. Blood work reveals 15,000 WBCs/microliter and elevated eosinophils. What is the next best step in diagnosis?

Choices:

1. Order liver enzymes (ALT, AST, ALP), and bilirubin
2. Order ELISA for Trichinella antibodies
3. Order blood culture for Malaria species
4. Order PCR assay for schistosome DNA

Moh'd Terbi

Answer: 2 - Order ELISA for Trichinella antibodies

Explanations:

- Trichinella infection is very difficult to recognize in the first few weeks of the disease because symptoms are easily confused for other more common infections.
- Facial pain can be the initial symptom of periorbital or facial edema, which is a common symptom in trichinella infection.
- Trichinella infection classically comes from infected pork products. However, infected meat from wild animals such as bear is increasingly a source of infection.
- Serology can be negative in the early stages of Trichinella infection but reaches 100% sensitivity by day 50.

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Moh'd Terbi

Research Concepts:

Trichinosis




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Question 49: A 19-year-old college student comes into the clinic with complaints of elbow swelling and tenderness. He denies any recent trauma to the area and any fevers or associated symptoms. He states the elbow has been steadily swelling for about a week now but doesn't seem to bug him unless he manipulates it. Upon physical exam, the elbow has the appearance of a golf ball like mass over the posterior bony prominence of the elbow. Patient has full painless active and passive range of motion. Which of the following is the most likely diagnosis?

Choices:

1. Septic arthritis
2. Olecranon bursitis
3. Reactive arthritis
4. Gonococcal arthritis

Moh'd Terbi

Answer: 2 - Olecranon bursitis

Explanations:

- Olecranon bursitis occurs when there is trauma or prolonged pressure to the olecranon bursa.
- The olecranon bursa is a superficial bursa which lies just underneath the skin and rests on the triceps tendon and olecranon.
- Olecranon bursitis may also sometimes be referred to as student's elbow. Prolonged pressure on the elbows such as in situations where a student leans on their elbows for prolonged periods of time, may cause inflammation of the olecranon bursa.
- Treatment of olecranon bursitis is initially treated conservatively with NSAIDs, rest, compression, ice, and needle aspiration. The latter can be both therapeutic and diagnostic.

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Research Concepts:

Olecranon Bursitis




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Question 50: An 18-year-old with intellectual disability and cerebral palsy, tracheostomy and ventilator dependent, had two days of increased secretions with color change to green. The worried parents bring him to the emergency department (ED) with one day of increased ventilator settings and oxygen requirement. In the emergency department, his temperature is 39.2 C (102.5 F), heart rate 140 beats/minute, blood pressure 75/50 mmHg, and oxygen saturation 82% on room air. A chest x-ray shows a right lower lobe infiltrate. The mother states that he recently finished a 14-day course of levofloxacin. Blood and tracheal cultures are obtained, and it is decided to start antibiotic treatment. His last tracheal culture, which was obtained five months ago, grew methicillin-resistant Staphylococcus aureus (MRSA). Based on this information which of the following antibiotic/antibiotic combinations will provide adequate coverage while awaiting the blood and tracheal cultures?

Moh'd Terbi

Choices:

1. Vancomycin
2. Clindamycin
3. Vancomycin plus piperacillin-tazobactam plus gentamicin
4. Cefepime

Answer: 3 - Vancomycin plus piperacillin-tazobactam plus gentamicin

Explanations:

- Empiric treatment for ventilator-associated pneumonia should include coverage against methicillin-resistant Staphylococcus aureus, Pseudomonas, and other gram negatives. Earlier treatment reduces the risk of complications. However, treatment should be tailored based on the identification of the organisms on tracheal and blood cultures because prolonged broad-spectrum antibiotics are associated with development of resistant infections as well as side effects.
- This patient was presenting in septic shock and was on antibiotics over the past three months, which are considered a risk factor for starting broad-spectrum antibiotics. Other risk factors include acute respiratory distress syndrome, five days or more of hospitalization before the development of ventilator-associated pneumonia, and acute renal replacement therapy before the development of ventilator-associated pneumonia. In addition, one should use the local antibiotic susceptibility pattern as well as the patient's past microbiology data.
- In a patient with more than one risk factor for a multidrug-resistant organism, the empiric treatment should cover methicillin-resistant Staphylococcus aureus with either vancomycin or linezolid plus two anti-Pseudomonas agents such as piperacillin-tazobactam, cefepime, meropenem, and aztreonam plus an aminoglycoside such as gentamicin, amikacin, or tobramycin. In the absence of risk factors, only one anti-Pseudomonal agent should be used. Monotherapy with aminoglycosides should be avoided.
- The combination of antibiotics should be given intravenously initially. It should be tailored once the antibiotic susceptibility results return. The decision to tailor antibiotics should also take into consideration the progression of clinical and laboratory

Wafa Terbi

markers of infection, such as fevers, white blood cells, and procalcitonin.

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Research Concepts:

Ventilator-associated Pneumonia




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Moh'd Terbi

Question 51: A 3-year-old boy with Lennox-Gastaut syndrome has benefitted greatly from treatment with clobazam but continues to have tonic seizures daily. After addition of another medication, his seizure frequency improved though he was noted to be more sedated and had worsening drooling. Which additional agent was most likely added to his regimen?

Choices:

1. Cannabidiol
2. Carbamazepine
3. Phenobarbital
4. Phenytoin

Moh'd Terbi

Answer: 1 - Cannabidiol

Explanations:

- Cannabidiol, like clobazam, is FDA approved for the treatment of Lennox-Gastaut syndrome.
- Cannabidiol decreases clobazam metabolism leading to increased clobazam levels.
- Side effects of clobazam, while milder, are similar to other benzodiazepines, including sedation and drooling. Decreasing the dose of clobazam upon addition of cannabidiol may limit the sedating side effects.
- Carbamazepine, phenobarbital, and phenytoin increase clobazam metabolism, and thus may be expected to lead to more seizures given the positive response to clobazam in the past.

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Research Concepts:

Clobazam




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Question 52: A 4-year old girl, whom you have followed in your practice since birth, was recently exposed to chickenpox. What is appropriate management?

Choices:

1. Obtain a history of whether or not the child has had varicella vaccine
2. Administer the varicella vaccine to the child
3. Contact the medical provider of the preschool classmate to verify the diagnosis of varicella
4. Draw blood for serologic testing

Moh'd Terbi

Answer: 1 - Obtain a history of whether or not the child has had varicella vaccine

Explanations:

- This child is healthy, so the first step is to assertain if the vaccine had been given. Immunocompromised children are candidates for Varicella-zoster immune globulin (VZIG) if there is no prior history of varicella.
- Acyclovir has been shown to lower the intensity and duration of symptoms if administered within 24 hours of the onset of symptoms. However, the drug is usually not recommended in otherwise healthy children.
- Varicella-zoster immune globulin is usually indicated for those individuals highly susceptible or those who are immunosuppressed.
- Varicella-zoster immune globulin if administered within ten days of exposure can alter the course of infection but can't prevent it. Maximal effectiveness of the immunoglobulin is evident when administered right after exposure.

Monir Terbi

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Research Concepts:

Varicella Zoster (Chickenpox)




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Question 53: A 3-week-old infant presents with tachypnea, diaphoresis, difficulty feeding, and weight loss. Patent ductus arteriosus is diagnosed. What is the appropriate treatment?

Choices:

1. Ibuprofen
2. Prostaglandin E1
3. Prostaglandin E2
4. Celecoxib

Moh'd Terbi

Answer: 1 - Ibuprofen

Explanations:

- Ibuprofen or indomethacin helps to close patent ductus arteriosus (PDA) by reducing prostaglandin synthesis, thus promoting closure of the ductus. Prostaglandins are responsible for maintaining the patency of the ductus arteriosus.
- Alprostadil, or prostaglandin E1, is used to maintain patency of the ductus arteriosus in patients with congenital heart disease awaiting definitive surgical correction.
- Inhibitors of prostaglandin biosynthesis can close the patent ductus. Prostaglandin E2 helps maintain the patency of the ductus arteriosus.
- Acetaminophen (paracetamol), ibuprofen, and indomethacin are pharmacologic agents used to induce closure of the patent ductus arteriosus. There is no evidence that COX-2 selective NSAIDs can be used successfully to close a patent ductus arteriosus.

Monia Terbi

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Research Concepts:

Patent Ductus Arteriosus




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Question 54: An infant male is born via spontaneous vaginal delivery to a 30-year-old woman with no significant past medical history. The mother received all routine prenatal care, and the prenatal course was unremarkable. Newborn screening is concerning for cystic fibrosis. He is discharged from the newborn nursery on day 3 of life, and his hospital stay was unremarkable. The patient is brought to the clinic for sweat testing. His weight is at the 45th percentile for age. His exam does not reveal any abnormalities. The result of a sweat test demonstrates a sweat chloride level of 47 mmol/L. CFTR genotyping for this patient shows a homozygous delta-F508 mutation. What is the next best step for diagnosis?

Choices:

1. Complete blood count
2. Repeat sweat test
3. Chest radiograph
4. No further testing is required

Moh'd Terbi

Answer: 4 - No further testing is required

Explanations:

- In patients with clinical signs of CF and an intermediate level of sweat chloride, genetic testing is performed to determine the next step in the diagnosis. Patients with a positive newborn screening for cystic fibrosis may already have genetic analysis provided, depending on the state.
- Patients with two known CF-causing alleles on genetic analysis and an intermediate sweat chloride level, no further testing is indicated. Clinical suspicion and a sweat chloride level above 30 mmol/L is diagnostic in these patients.
- For patients who have genetic testing that result in known alleles that do not cause CF, no testing is indicated as cystic fibrosis is unlikely in these patients.
- Further testing after genetic analysis in patients with an intermediate level of sweat chloride is indicated if the analysis points to alleles that are undefined or cause varying clinical sequelae. Further testing includes repeat sweat testing or alternative analysis of CFTR function, such as nasal potential difference or intestinal current measurement.

Mehdi Terki

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Research Concepts:

Sweat Testing



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Moh'd Terbi

Question 55: A 17-year-old female presents to the office with foot pain. The patient states that about one week ago, she noticed that the ball of her foot began to hurt when she went on her daily jogs. She is anxious and concerned that she has gained "a lot of weight" in the last 3 days due to her inability to exercise. She normally runs 5 miles a day and maintains a strict caloric intake. She has further decreased her caloric intake in the last 3 days to compensate for the weight gain. On exam, she is a thin female. Point tenderness above the first metatarsal of her left foot is noted. She is also noted to have fine, soft, white hairs on her arms. What other finding is likely to be present in this individual?

Choices:

1. Decreased potassium levels
2. Decreased platelet levels
3. Increased hemoglobin levels
4. Increased phosphorus levels

Moh'd Terbi

Answer: 1 - Decreased potassium levels

Explanations:

- Based on the vignette, the patient most likely has anorexia nervosa.
- Anorexia is associated with stress fractures, lanugo, and abnormal electrolytes levels. Most commonly noted electrolyte abnormalities include hypophosphatemia and hypokalemia.
- Patients with anorexia nervosa also develop macrocytic anemia due to nutritional deficiencies.
- In rare cases, severe bone marrow abnormalities including cytopenias, especially aplastic anemia may develop.

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Moh'd Terbi

Research Concepts:

Anorexia Nervosa




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Question 56: A two-year-old male child is being evaluated for severe recurrent upper respiratory infections since 9 months of age. Additionally, in the last year, he has been hospitalized for pneumonia on two separate occasions for which he was successfully treated with intravenous antibiotics. There is no family history of similar conditions amongst any children. HIV testing performed twice, once at 1 year of age and the second at 18 months was found to be negative on both occasions. On physical examination, the child is found to be below the 10th centile for height and weight but otherwise in fair condition. Which of the following tests is most appropriate for the primary evaluation of the patient?

Choices:

1. Karyotype analysis
2. Microarray for assessing variations in gene copy number
3. Serum protein electrophoresis
4. Serum levels of immunoglobulin isotypes

Mehdi Terbi

Answer: 4 - Serum levels of immunoglobulin isotypes

Explanations:

- The diagnosis of hypogammaglobulinemia is based on demonstrating decreased levels of immunoglobulins (generally below 2 SD for the age-appropriate reference interval).
- Quantitative determination of immunoglobulin number aids in confirming antibody deficiency and determining which isotype/s are affected.
- Qualitative testing for immunoglobulin number such as serum protein electrophoresis is not sensitive enough to confirm a diagnosis of hypogammaglobulinemia and quantitative analysis is thus required. Total immunoglobulin quantitation is usually measured by immunonephelometric or immunoturbidometric techniques.
- Quantitative analysis of serum levels of immunoglobulins including measurement of serum IgG subgroups forms part of the initial evaluation of suspected antibody deficiency syndromes. This has to be shown before further, more definitive and expensive testing to confirm the type of primary hypogammaglobulinemia (for example genetic testing) can be done.

Mona Terbi

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Research Concepts:

Hypogammaglobulinemia



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Question 57: A 17-year-old female presents with secondary amenorrhea which started six months ago. She is not sexually active and has no significant past medical history. She reports that she did a pregnancy test anyway, and it was negative. The exam is normal except for bilateral galactorrhea. Which of the following tests is most likely to provide the diagnosis?

Choices:

1. Human chorionic gonadotropic hormone (hCG)
2. Prolactin level
3. Follicle-stimulating hormone (FSH)
4. Luteinizing hormone (LH)

Moh'd Terbi

Answer: 2 - Prolactin level

Explanations:

- The patient most likely has a prolactinoma. If the prolactin level is elevated, then the thyroid-stimulating hormone should be checked. This is done to determine whether the elevated prolactin is secondary to elevated thyrotropin-releasing hormone.
- Also, an elevated prolactin level should be followed up with a magnetic resonance imaging (MRI) scan of the pituitary or computed tomography (CT) with contrast of the region to look for a possible mass lesion.
- All patients with tumors adjacent to or compressing to optic chiasm should be referred for formal visual field testing.
- Cabergoline and bromocriptine are two commonly used dopamine agonists. Dopamine agonists suppress the synthesis and release of prolactin and lactotroph cellular proliferation causing shrinkage of the tumor. They can cause nausea and dizziness.

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Research Concepts:

Prolactinoma




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Question 58: A 16-year-old female presents to the hospital with high-grade fever and headache for the last 2 days. She has had an upper respiratory infection for the last 2 weeks as well. On examination, she has right-side weakness and numbness. MRI brain shows cortical and deep grey matter enhancing lesions. Lumbar puncture revealed lymphocytic pleocytosis without any oligoclonal bands. Which medication has been shown to shorten the duration of neurological symptoms and halt the progression of the disease?

Choices:

1. Acetaminophen
2. Corticosteroids
3. Ibuprofen
4. Antibiotics

Moh'd Terbi

Answer: 2 - Corticosteroids

Explanations:

- Acute disseminated encephalomyelitis (ADEM), also referred to as post-infectious encephalomyelitis, is an acute, rapidly progressive, autoimmune process that occurs in the central nervous system. ADEM is characterized by demyelination in the brain and spinal cord (and occasionally the optic nerve), as a result of inflammation that occurs in response to a preceding infection or immunization.
- Corticosteroids shorten the duration of neurological symptoms and halt the progression of the disease in acute disseminated encephalomyelitis.
- ADEM is treated with immunosuppression with high-dose intravenous glucocorticoids. These can be started simultaneously with acyclovir and/or antibiotics on the initial patient presentation. If a patient is not improving or is responding poorly to glucocorticoid treatment, try intravenous immune globulin (IVIG), plasma exchange, or cyclophosphamide.
- Ibuprofen is used for body pains, but it does not shorten the duration of neurological symptoms. Acetaminophen is used for fever management, but it does not shorten the duration of neurological symptoms.

Mohit Tech

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Research Concepts:

Acute Disseminated Encephalomyelitis



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Moh'd Terbi

Question 59: A mother and father bring their eleven-month-old infant to the office. They say the infant, although initially amicable, has become inconsolable, often does not interact with the parents, has developed a gluteal scaly rash, and they think the baby has stopped growing. History also revealed that the mother had stopped breastfeeding 5 weeks ago and was feeding the infant exclusively with a new homemade formula. On examination, the rash looks burn-like and psoriasiform. What is the most likely cause of this child's constellation of symptoms?

Choices:

1. Wilson disease
2. Botulinum
3. Acrodermatitis enteropathica
4. Vitamin D toxicity

Moh'd Terbi

Answer: 3 - Acrodermatitis enteropathica

Explanations:

- Acrodermatitis enteropathica is a rare disease with an incidence estimated at 1 per 500,000 and is a disease of zinc malabsorption.
- Acrodermatitis enteropathica often becomes symptomatic 4 to 6 weeks after an infant has stopped breastfeeding. Clinical symptoms include irritability, withdrawn disposition, growth impairment, anorexia, and cutaneous involvement manifests as periorificial, gluteal, perineal, or acral predominant burn-like psoriasiform lesions.
- Acrodermatitis enteropathica occurs as an autosomal recessive mutation of the SLC39A4 gene on chromosome 8q24.3 that encodes the Zip4 transporter.
- Treatment of acrodermatitis enteropathica is 1 to 2 mg/kg/day of lifelong zinc supplementation.

Mohd Terbi

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Research Concepts:

Zinc Deficiency




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Question 60: A 16-year-old female who works in a pet store is admitted to the hospital with presumed viral meningitis. She presented with one week of fever, headache, malaise, and nausea. After extensive evaluation, she is diagnosed with lymphocytic choriomeningitis virus. Which of the following is the most likely vector of her illness?

Choices:

1. Human
2. Deer tick
3. Mosquito
4. Mouse

Moh'd Terbi

Answer: 4 - Mouse

Explanations:

- Lymphocytic choriomeningitis virus (LCMV) is a rodent-borne virus, usually spread by the house mouse.
- LCMV is a rare cause of viral meningitis.
- LCMV is usually spread via inhalation of aerosolized rodent urine or droppings.
- LCMV can also be transmitted via vertical transmission or through the liver, kidney, or corneal transplants.

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Research Concepts:

Moh'd Terbi

Viral Meningitis




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Question 61: A 3-month-old white female presents due to her parents being concerned about a rash on her scalp for six weeks. The child has met all developmental milestones and is up to date with her vaccinations. She has no reported allergies and uncomplicated birth history. The family history is negative for atopy. She is in the thirty-fifth percentile for height and fiftieth percentile for weight. The mother denies associated fever, vomiting, or diarrhea. On physical examination, the infant has an erythematous rash with golden crusts and a moderate scale on the vertex of the scalp. The rest of the physical examination is normal. What is the most appropriate treatment?

Choices:

1. Topical triamcinolone 1% ointment
2. Topical vaseline
3. Daily cetirizine suspension
4. Topical mupirocin

Moh'd Terbi

Answer: 2 - Topical vaseline

Explanations:

- Cradle cap presents in infants as an erythematous rash on the scalp, eyebrows, eyelids, and external ears, generally without other symptoms or evidence of pain, discomfort, or systemic dysfunction for the patient.
- Initial treatment for cradle cap is mostly reassurance, with interventions focused on avoiding medication with potential side effects. Topical emollients (vaseline, mineral oil, baby oil) help to dissolve the crusting to allow it to be wiped away. If persistent, second-line treatments may include topical anti-fungal preparations, like selenium sulphide or ketoconazole or low potency topical steroids.
- While common in children and frequently associated with scaling or potentially crusting of the cheeks, the typical incidence of eczema is after three months of age. It would be associated with pruritis and discomfort, as well as potential poor growth and other systemic symptoms. Treatment with topical steroids or systemic antihistamines should be avoided if symptoms can be managed with supportive interventions.
- Impetigo, which could be treated with topical antibiotics, is often challenging to differentiate from cradle cap but would be associated with more evidence of infection, such as redness, drainage, discomfort, or fevers and an infant with persistent impetigo for six weeks would likely have worsening of the rash as well as a worsening condition overall.

Mohit Tehri

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Research Concepts:

Cradle Cap

StatPearls Knowledge Base

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Moh'd Terbi

Question 62: A 7-year-old child is seen in the clinic with complaints of a limp. The mother claims that the child has been crying and has been anorexic, lethargic, and febrile for the past 13 weeks. She denies any trauma but also noticed that she started to limp recently. She has missed school for the past 2 weeks. She has been to her general practitioner, who only prescribed antibiotics. The physical exam reveals an ill-looking child with a temperature of 101F, swollen right knee, and ankle, and there is marked joint stiffness. Her muscles in the leg are tender to deep palpation. Abdominal exam reveals hepatosplenomegaly and linear salmon-colored rash on the trunk. Blood work reveals elevation of ESR, CRP, and presence of antinuclear antibodies. Her leg x-rays are unremarkable except for the soft tissue swelling. Which of the following is the best treatment?

Choices:

1. Infliximab
2. Methotrexate
3. Anakinra and corticosteroids
4. Sulfasalazine

Moh'd Terbi

Answer: 3 - Anakinra and corticosteroids

Explanations:

- Systemic Juvenile idiopathic arthritis is not common and in most cases, the joint symptoms start after the constitutional symptoms.
- The child will usually look ill and have a salmon-colored rash. The joints will be swollen and tender.
- Other features of the disorder include hepatosplenomegaly, muscle tenderness, and even signs of pericarditis.
- Systemic juvenile idiopathic arthritis can be treated with oral corticosteroids but in acutely ill patients anakinra is recommended. Those who have no systemic features can be treated with methotrexate or leflunomide. Hospital admission is usually required and an echo should be obtained to ensure that the patient does not have a pleural or pericardial effusion.

Mohamed Terbi

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Research Concepts:

Juvenile Idiopathic Arthritis




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Question 63: A 16-year-old female presents with a soft tissue mass around her right shoulder for the past three months. She denies any recent increase in the size of the swelling. On exam, the mass is nontender, and a bruit is heard when the mass is auscultated. MRI demonstrates a lytic lesion with low attenuating fluid levels. Pathology reveals empty cystic spaces resembling aneurysmal bone cysts and septa populated by pleomorphic cells. The diagnosis is made, and treatment is started. Which of the following best describes medical management of the suspected diagnosis?

Choices:

1. No significant response to chemotherapy
2. Moderate response to chemotherapy
3. Better response than the conventional disease
4. Chemotherapy is utilized for recurrence only

Moh'd Terbi

Answer: 3 - Better response than the conventional disease

Explanations:

- Telangiectatic osteosarcoma usually shows a better response to chemotherapy than conventional osteosarcoma.
- Survival rates with current chemotherapy protocols are within the range of 65% after five years.
- Chemotherapeutic protocols for telangiectatic osteosarcoma are similar to those of conventional osteosarcoma. Patients will have two to six cycles of chemotherapy administered before surgery.
- The common chemotherapeutic agents used include cisplatin, carboplatin, methotrexate, doxorubicin, and ifosfamide. Among these, at least two agents need inclusion in a dual-drug therapy regimen.

Mahdi Terbi

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Research Concepts:

Telangiectatic Osteosarcoma




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Question 64: A 3-year-old female who was treated for anti-NMDAR encephalitis three months ago is being treated with antiepileptic medications. She now presents for a regular follow up. She has no active complaints. A review of her chart reveals a positive PCR for HSV in her cerebrospinal fluid analysis. Which of the following best describes the relationship between HSV and anti-NMDAR encephalitis?

Choices:

1. 27% of HSV encephalitis develops anti-NMDAR encephalitis within 2 months
2. 90% of HSV encephalitis develops at the same time anti-NMDAR encephalitis
3. No cases of HSV encephalitis having been associated with autoimmune encephalitis
4. Less 5% of HSV encephalitis develops anti-NMDAR encephalitis within 1 year of initial infection

Moh'd Terbi

Answer: 1 - 27% of HSV encephalitis develops anti-NMDAR encephalitis within 2 months

Explanations:

- According to and study where evaluated two cohorts, found that 27% of patients with HSV encephalitis develop Anti NMDAR antibodies within 2 months of initial HSV encephalitis.
- In patients with HSV encephalitis that triggered later anti-NMDAR encephalitis, initially, they usually are negative for anti-NMDAR antibodies
- There is evidence from epidemiological studies and mouse model that HSV is linked to anti-NMDAR encephalitis.
- In HSV encephalitis, if complicated with anti-NMDA encephalitis usually presents within 2 months of initial presentation in 27% of cases.

Mohd Terbi

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Research Concepts:

Anti-NMDA Receptor Encephalitis In Children




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Question 65: A 3-year-old male presents with a 3-day history of diarrhea. He has no previous medical history of note and was not on any chronic medication. On examination, he is clinically dehydrated with a blood pressure of 95/65 mmHg. Appropriate intravenous fluids are initiated. Which of the following would be the most likely state of sodium in this patient before rehydration was started?

Choices:

1. Fractional excretion of sodium would be greater than 2%
2. Random urine sodium would be greater than 40 mmol/L
3. Fractional excretion of sodium would be less than 1%
4. Renal sodium loss would be greatest prior to adequate rehydration

Moh'd Terbi

Answer: 3 - Fractional excretion of sodium would be less than 1%

Explanations:

- Acute renal failure is likely given the clinical scenario with no previous history of renal disease and the short duration of illness. The renal failure is likely to be prerenal, however, with late presentation and treatment may progress to acute tubular necrosis and intrinsic renal failure.
- In the presence of dehydration and normal renal function, there is increased water and sodium reabsorption by the renal tubules. This would result in decreased sodium loss via the kidneys and fractional excretion of sodium of less than 1%. Fractional excretion is low in volume responsive dehydration.
- Calculation of fractional excretion requires measurement of serum and urine sodium and creatinine.
- Low fractional excretion of sodium also can be seen with azotemia due to hepatic or cardiac failure, as well as acute glomerulonephritis, pigment nephropathy, contrast nephrotoxicity, polyuric renal failure associated with burns, acute obstruction, renal transplant rejection, and occasionally non-oliguric acute renal failure. None of these is a volume-responsive process.

Moh'd Terbi

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Research Concepts:

Renal Function Tests



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Moh'd Terbi

Question 66: An 8-year old child is brought to the emergency department after being struck by a car while crossing the street. He is not alert. He required immediate intubation at the scene by emergency management services. His Glasgow coma scale is 8. He appears to have a significant laceration of his scalp on the left side, but there are no skeletal fractures. The initial chest x-ray reveals a right-side pneumothorax. A chest tube was inserted. His hematocrit is 30%, and his hemoglobin is 10.6 g/dL. Heart rate is 100 bpm, blood pressure 100/60 mmHg, and respirations 20/minute. What is the next step in management?

Choices:

1. CT of the head, thorax, and abdomen
2. Repeat chest x-ray
3. Repeat blood work
4. MRI of the head and neck

Moh'd Terbi

Answer: 1 - CT of the head, thorax, and abdomen

Explanations:

- The patient has two signs of Waddell triad and has a low hematocrit. The abdomen, especially the retroperitoneum, can be a source of significant bleeding.
- The Waddel triad includes trauma to the head, abdomen, thorax, and lower extremities with a car versus pedestrian impact. The full workup includes a whole-body CT scan, which can rapidly identify injuries to the brain (intracranial hemorrhage), chest, abdomen, and presence of any fractures. This is usually done as part of the tertiary trauma survey, which follows the secondary survey (a focused history and physical exam).
- If the patient has low hematocrit and there is no fracture, and the chest is clear, think about possible bleeding in the abdomen.
- The size of the child and the type of car can help determine injury patterns. Injury patterns will vary depending on the country and what side of the road a driver is on when a pedestrian is impacted by the vehicle. Children ages 1 to 5 years may be knocked down and dragged under the vehicle. The front bumper causes injuries to the femur, chest, abdomen, and pelvis. Children ages 3 to 11 years are prone to bumper impacts that fracture femurs and chest injuries from fenders or the hood. A child may be thrown onto the hood and hit the windshield, causing head and facial trauma. Another insult to the head occurs when the car stops abruptly, and they are thrown off the hood and onto the road striking their head again. Suspect multiple injuries with a car versus pedestrian impact. When taking a history, determine speed, the point of impact, and any safety gear worn at the time.

Mom's Terry

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Research Concepts:

Waddell Triad




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Moh'd Terbi

Question 67: A 2-month-old male is brought in with lethargy, a weak cry, and poor feeding. There have been no fevers, congestion, vomiting, or diarrhea. The infant has not had a bowel movement in 3 days. Normally, the patient takes 6 ounces per feeding but only has been taking 2 ounces. The mother is concerned because the infant has been unable to hold his head up and has been less active. The exam shows no fever, normal vital signs, and no obvious distress. The child is alert, the mucosa is clear, and the anterior fontanelle is flat. The cardiopulmonary exam is normal. The abdomen is soft without masses. The neurologic exam shows reactive pupils, decreased tone, and decreased gag. There is notable head lag and diminished deep tendon reflexes. Which feature makes Werdnig-Hoffman disease likely?

Choices:

1. Tongue fasciculations
2. Constipation
3. Increased deep tendon reflexes
4. Severe spasticity

Moh'd Terbi

Answer: 1 - Tongue fasciculations

Explanations:

- Werdnig-Hoffman disease is also known as infantile spinal muscular atrophy. Infants may show tongue fasciculations, decreased tendon reflexes, and hypotonia.
- Constipation is rarely a presenting feature of this diagnosis.
- Werdnig-Hoffman, or spinal muscular atrophy type 1, is an autosomal recessive disease with muscle weakness secondary to degeneration of alpha motor neurons of the anterior horn.
- Patients with this disease have severe hypotonia from birth and absent deep tendon reflexes. However, they are mentally alert.

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Moh'd Terbi

Research Concepts:

Spinal Muscle Atrophy




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Question 68: An 11-year-old boy presents to the emergency department with a history of vomiting, abdominal pain, and facial edema. His mother said that he had experienced swelling of the eye and lips on several occasions. An immunological study was ordered and showed normal B and T cell functions and low levels of C1 inhibitor. What is the most likely diagnosis?

Choices:

1. Systemic lupus erythematosus
2. Hereditary angioedema
3. Leukocyte adhesion deficiency
4. Peanut allergy

Moh'd Terbi

Answer: 2 - Hereditary angioedema

Explanations:

- Hereditary angioedema is an uncommon autosomal dominant disease.
- It is caused by C1 inhibitor deficiency.
- Clinically, there is presence of edema in several organs, including laryngeal edema.
- Drugs such as danazol can increase C1 inhibitor levels.

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Research Concepts:

Moh'd Terro

Hereditary Angioedema




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Question 69: A 16-year-old male was brought to the emergency department for fever and chills that was not relieved with acetaminophen. According to the parents, the fever started two days ago when the patient returned from school. He was fine prior to the fever. According to the patient, one of his classmates had an upper respiratory tract infection the day he developed a fever. The patient's only past medical history is sickle cell disease. He takes folic acid daily. His blood pressure was 103/67 mmHg, and his heart rate was 90 bpm. Physical examination showed via young male in no acute distress, cardiac and lung exam unremarkable. Abdominal examination was benign. He was started on oseltamivir for possible influenza infection. After 12 hours of hospitalization, the patient developed altered mental status and respiratory failure. He was immediately started on mechanical ventilation and IV antibiotics. The patient died 72 hours after admission due to cardiorespiratory failure. What test should have been done to rule out the cause of death?

Moh'd Terbi

Choices:

1. Complete blood count
2. Chest x-ray
3. Lumbar puncture
4. Urinalysis

Answer: 3 - Lumbar puncture

Explanations:

- Patients with sickle cell anemia are prone to asplenia due to autosplenectomy.
- Asplenia is the term for without spleen function. Patients with sickle cell anemia develop atrophy of the spleen due to rapid sequestration of red blood cells leading to enlargement and then atrophy.
- Pneumococcal meningitis patients have a poor prognosis, especially in patients with asplenia. IV antibiotics are required to be started immediately.
- Sepsis work-up, including lumbar puncture, should be done to access the cause of fever in a patient with asplenia.

Mohd Terbi

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Research Concepts:

Asplenia




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Question 70: A 4-month-old female presents with her parents who report the patient had a normal vaginal birth, but recently the provider noted the patient has not met all of her developmental milestones. Today the parents became alarmed when they noted the patient had several episodes of abnormal movements where the patient will quickly flex and extend her extremities, trunk, and neck with noted head bobbing. They deny that the patient has had any recent fevers, respiratory distress, cyanosis, vomiting, or diarrhea. What are the classical features for diagnosis of this syndrome?

Choices:

1. Fever, seizures, and normal laboratory findings
2. Abnormal MRI of the spine and sudden onset bilateral lower extremity weakness
3. Developmental delay, blindness, and extremity muscle spasticity
4. Clusters of spasms, EEG with hypsarrhythmia, and developmental delay

Mohamed Terbi

Answer: 4 - Clusters of spasms, EEG with hypsarrhythmia, and developmental delay

Explanations:

- Fevers, seizures, and normal laboratory findings are most characteristic of febrile seizures. The patient in the above questions is afebrile and is also noted to have abnormal developmental milestones which are more characteristic of infantile spasms than of febrile seizures.
- Patients with infantile spasms may have abnormalities of MRI of the brain but will likely have a normal MRI of the spine. They are also not characterized as having sudden onset of weakness or motor deficits after spasms have resolved. The above is stating findings consistent with transverse myelitis.
- Cerebral palsy is characterized by developmental delay, blindness, and muscle spasticity. Patients with infantile spasms will also demonstrate developmental delay and can have muscle spasticity when having spasms that will resolve. An association of blindness has not been demonstrated in infantile spasms.
- Infantile spasms are classically described as clusters of spasms, EEG with hypsarrhythmia and developmental delay. The patient presenting in the above questions was noted by parents not to have met all developmental milestones and is demonstrating clusters of spasms that they describe as characteristics spasms of infantile spasms. If a patient were to present as the above patient then further testing with EEG would be indicated.

Mon's Tchr

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Research Concepts:

Infantile Spasms

StatPearls Knowledge Base

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Moh'd Terbi

Question 71: A male infant is born at 40 weeks by emergency cesarean delivery due to placental abruption. He receives positive pressure ventilation, chest compressions, and is endotracheally intubated. Apgar scores are 1, 1, and four at 1, 5, and 10 minutes, respectively. Upon examination at 30 minutes of age, he is breathing spontaneously but is lethargic with strong distal flexion, overactive reflexes, and miosis. Arterial blood gas is pH 6.9, pCO2 40, pO2 70, base deficit 20. Therapeutic hypothermia is started. What are the benefits of therapeutic hypothermia in this patient?

Choices:

1. Decreased risk of death
2. Decreased risk of neurodevelopmental impairment
3. Decreased risk of death and decreased risk of neurodevelopmental impairment
4. Decreased risk of death but increased risk of neurodevelopmental impairment

Mon'd Terbi

Answer: 3 - Decreased risk of death and decreased risk of neurodevelopmental impairment

Explanations:

- The patient in the vignette has clinical evidence of hypoxic-ischemic encephalopathy (HIE). Lethargy with strong distal flexion, overactive reflexes, and miosis is consistent with Sarnat stage II HIE.
- Therapeutic hypothermia decreases both the risk of death and the risk of neurodevelopmental impairment in patients with Sarnat stage II HIE.
- One of the concerns, when therapeutic hypothermia was first being studied, was the question of whether it would increase survival with survivors having worse neurodevelopmental outcomes. This has not been shown to be true.
- No study has shown an increase in disability or worse performance on tests of neurodevelopment in survivors treated with therapeutic hypothermia.

Michael Terbi

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Research Concepts:

Birth Asphyxia




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Question 72: A 5-year-old white girl presents with gastrointestinal symptoms of bloating, diarrhea, and stomach ache. The patient has reported episodes of diarrhea in the past. Thus, testing for specific anti-tissue transglutaminase (anti-tTG) IgA and anti-tTG IgG antibodies was performed, where only the anti-tTG IgG antibodies were positive. Further examination reveals a serum level of IgA below the detectable range, while the other isotypes of immunoglobulin levels were in the reference range. The diagnosis of celiac disease along with selective IgA deficiency was established. The microbiology study of feces was normal. The girl was vaccinated according to the immunization program, and the titers of antibodies were protective. What is the next step in managing the patient?

Choices:

1. Administration of intravenous immunoglobulin
2. Gluten-free diet and immunoglobulin levels every 4 to 6 months
3. Administration of antibiotics
4. Gluten-free diet adherence

Mon'd Terbi

Answer: 2 - Gluten-free diet and immunoglobulin levels every 4 to 6 months

Explanations:

- Patients with selective IgA deficiency have a 10 to 20 times higher risk of developing autoimmune diseases, such as celiac disease.
- Anti-tTG (anti-tissue transglutaminase) antibodies are highly sensitive and specific for the diagnosis of celiac disease. They have a sensitivity of 90% to 98% and specificity of 95% to 97%.
- The autoimmune disorder present dictates the management of patients with severe IgA deficiency and autoimmune disease.
- Selective IgA deficiency is a disorder where the lack of secretory IgA could also provoke complaints of the gut as a consequence of infections.

Mohd Terbi

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Research Concepts:

IgA Deficiency




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Question 73: A 5-day old neonate was diagnosed with breast milk jaundice. The infant had a normal vaginal delivery with no complications. Weight, height, and head circumference were just above the 50th percentile and remained there on the follow-up visit. The mother did not have any issues with the exclusive breastfeeding and the baby was latching adequately and drinking sufficiently at each feed. Blood investigations were performed. Apart from the moderately raised unconjugated bilirubin, the serum creatinine result was 0.0 mg/dL. The reference interval for neonates is 0.2-0.9 mg/dl. What is the likely reason the creatinine is low?

Choices:

1. Loss of muscle bulk
2. Low protein diet
3. Negative interference Jaffe reaction
4. Dehydration

Moh'd Terbi

Answer: 3 - Negative interference Jaffe reaction

Explanations:

- Although the loss of muscle mass and low protein diet is associated with a decreased serum creatinine value, in this case, it is an unlikely cause as infant weight was following the appropriate percentile and the infant was feeding well.
- Dehydration is associated with an increase in serum creatinine, and this will also be accompanied by a more significant increase in BUN.
- The Jaffe reaction is the most widely used methodology for the assessment of serum creatinine. Negative interferences that result in lowered serum creatinine when measured using the Jaffe reaction include the presence of an elevated bilirubin level.
- Interferences with the Jaffe reaction may be overcome with the use of kinetic assays. Manufacturers often apply a factor to account for the positive interference of proteins; this is subtracted from all results and may lead to falsely low serum creatinine results, particularly in the pediatric population.

Mohit Tehri

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Research Concepts:

Fructosamine




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Question 74: A 17-year-old boy presents to the emergency department with a 6-hour history of a severe headache with nausea and vomiting. He describes the pain as throbbing and points to the right side of his head. His mother gave him some acetaminophen a few hours ago, but it has not helped relieve his symptoms. He denies any trauma. His past medical history is unremarkable. He does well in school and plays soccer. His vital signs are within normal limits. A CT scan of the head shows no abnormalities. The clinician administers ketorolac and an anti-emetic medication to the patient. Which of the following is the most likely mechanism of action of the anti-emetic medication in this patient?

Choices:

1. Dopamine receptor antagonist
2. Mu receptor agonist
3. Serotonin receptor antagonist
4. GABA receptor agonist

Moh'd Terbi

Answer: 1 - Dopamine receptor antagonist

Explanations:

- The patient's clinical presentation is consistent with a migraine. Normal vitals and imaging rules out any brain hemorrhage or other serious conditions.
- The literature states that giving both ketorolac and prochlorperazine is the most effective in the case of pediatric migraine.
- Sensitivity to dopamine in patients with a migraine might play an important role in migraine symptoms such as nausea and vomiting.
- The blocking of dopamine transmission might also decrease pain perception in migraines by inhibiting nociception in the trigeminocervical complex and thalamus.

Mohd Terbi

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Research Concepts:

Prochlorperazine




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Question 75: A 4-month-old previously healthy child is brought in after jerking movements of the legs and arms 30 minutes before presenting to the emergency room. The triage nurse reports the infant had another episode in the waiting room. The child is sleepy. The anterior fontanelle is flat, vital signs are normal, and the patient is afebrile. Which of the following would be the most important initial laboratory studies?

Choices:

1. CBC with differential
2. Lumbar puncture for cerebrospinal fluid studies
3. Electrolytes, glucose, calcium, and magnesium
4. Toxicology screen

Moh'd Terbi

Answer: 3 - Electrolytes, glucose, calcium, and magnesium

Explanations:

- Evaluation of a new seizure in a previously healthy young infant should begin with electrolytes, glucose, calcium, and magnesium.
- Metabolic causes of seizures most commonly are hypoglycemia, hyponatremia, and hypocalcemia.
- Of course, while drawing blood, other studies such as CBC with differential should be completed.
- Any recent or current fever should prompt consideration for lumbar puncture and cerebrospinal fluid analysis.

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Moh'd Terbi

Research Concepts:

Seizure




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Question 76: A 12-year-old girl presents to the office for a follow-up visit. One year ago, the patient had significant difficulty with school classes, socializing with classmates, and scored 65 on an IQ test. The patient was diagnosed with mild intellectual disability. During this visit, the patient reportedly has improved school grades and scores 90 on the IQ test. What most likely caused the patient's difficulty one year ago?

Choices:

1. Down syndrome
2. Rett syndrome
3. Learning disability
4. Family maltreatment

Moh'd Terbi

Answer: 4 - Family maltreatment

Explanations:

- Intellectual disability is irreversible and permanent.
- This child's dramatic cognitive improvement leads away from an intellectual disability.
- Childhood abuse and untreated medical conditions must be investigated.
- Other choices cause permanent cognitive impairment.

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Research Concepts:

Moh'd Terro

Intellectual Disability




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Question 77: A 2-year-old male is brought to the clinic with a chronic history of diarrhea, vomiting, failure to thrive, fatty stools. Lipid profile shows very low LDL and triglyceride levels. A peripheral blood smear depicts non-uniformly spiculated RBCs. What is the most likely diagnosis?

Choices:

1. Abetalipoproteinemia
2. Neuroacanthocytosis
3. Spur cell anemia
4. Whipple disease

Moh'd Terbi

Answer: 1 - Abetalipoproteinemia

Explanations:

- Also known as Basseg-Kornzweig Syndrome, abetalipoproteinemia is a disease that presents in infants with failure to thrive, diarrhea, vomiting, and fat malabsorption.
- Acanthocytes are characteristically visible on peripheral smear, with associated hemolytic anemia, reticulocytosis and raised bilirubin levels.
- Malabsorption of fat-soluble vitamins such as vitamin A, D, E and K results in the majority of the clinical manifestations.
- This patient does not have neurologic symptoms to point towards a diagnosis of acanthocytosis. Spur cell anemia is seen in chronic liver disease patients. Whipple disease is characterized by malabsorption, joint pain, neurological symptoms in the setting of a gastrointestinal infection with Tropheryma whipplei.

Mohd Terbi

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Research Concepts:

Acanthocytosis




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Question 78: A 17-year-old female presents with a severe sore throat. She has been sick with a fever for four days. The patient's voice is muffled, and she prefers not to speak secondary to pain. She has not been able to eat solids for 2 days and has refused to drink for 1 day. Vital signs show a temperature of 39.8 C, heart rate 140 beats/min, respiratory rate 20, and blood pressure 110/70 mmHg. The exam shows the tonsils to be four-plus enlarged with partial airway obstruction and grey-white exudates. It is associated with cervical lymphadenopathy and splenomegaly. A rapid strep screen is negative. A CBC shows atypical lymphocytes. What is the most appropriate management?

Choices:

1. Admission for IV antibiotics
2. Admission for IV corticosteroids
3. Admission for hydration and IV antibiotics
4. Admission for hydration and corticosteroids

Mona Terbi

Answer: 4 - Admission for hydration and corticosteroids

Explanations:

- This patient likely has infectious mononucleosis. The clinical presentation can vary, but patients typically have a fever, pharyngitis, and lymphadenopathy.
- The patient is febrile, tachypneic, tachycardic, refusing to eat or drink secondary to throat pain, and is at risk of airway obstruction. She needs IV fluids and corticosteroids.
- Treatment typically is supportive only, including rest, analgesics, and antipyretics.
- Amoxicillin is not effective against the Epstein-Barr virus and often causes a rash.

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Moh'd Terbi

Research Concepts:

Mononucleosis




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Question 79: A 17-year-old female presents complaining of lower abdominal pain, as well as urinary urgency and dysuria for the past two days. She denies any fevers, chills, or other systemic symptoms. A urinalysis was positive for an infection, and she was prescribed antibiotics. Her culture shows her infection is not from E. coli. Which organism is the most likely cause of her infection?

Choices:

1. Klebsiella
2. Pseudomonas aeruginosa
3. Enterococcus
4. Candida

Moh'd Terbi

Answer: 1 - Klebsiella

Explanations:

- E. coli is the most prevalent bacterial pathogen causing urinary tract infections (UTIs) in the adult, pediatric, and elderly populations. It is the most common cause of both community-acquired and nosocomial UTIs.
- The next most common bacterial agent causing UTIs after E. coli is Klebsiella.
- A number of antibiotics can be used to treat UTIs, including trimethoprim-sulfamethoxazole, nitrofurantoin, cephalosporins, ciprofloxacin, and ampicillin. Increasing antimicrobial resistance, however, complicates treatment regimens.
- Urinary tract infections caused by extended-spectrum beta-lactamase (ESBL)-producing E. coli are also increasing, further complicating treatment measures, as these infections require stronger antibiotic course and duration.

Mona Terbi

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Research Concepts:

Acute Cystitis




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Question 80: A 2-month-old infant developed a yellowish, greasy-looking firm mass over the scalp vertex with some extension on to the front of the scalp. There was also some fine, white scaling on the center of the forehead, behind the ears and down the side of the nose to the upper third of the nasolabial folds. The infant seems happy and unaware of this problem. Topical 1% hydrocortisone cream twice daily was prescribed, but the parents were not keen to use a corticosteroid, and compliance has been poor, with little improvement. Which of the following is the next step in the management of this patient?

Choices:

1. Griseofulvin 20 mg/kg, once daily
2. Ketoconazole 2% cream, once daily
3. Mometasone furoate 0.1% cream once every 2nd day
4. Itraconazole, 5mg/kg, once daily

Moh'd Terbi

Answer: 2 - Ketoconazole 2% cream, once daily

Explanations:

- The combination of desquamating epidermal scalp cells, skin surface crust & secretions creates a firm "cradle cap" that is a non-inflammatory condition and the most typical presentation of seborrheic dermatitis in infants. It tends to appear after the first week of life with a peak prevalence of around three months.
- The first-line treatment for cradle cap is to counsel the parents and then soften the cap at night, with a moisturizer such as sorbolene cream or a keratolytic such as salicylic acid, and remove the debris with a soft-bristled toothbrush in the morning.
- Topical 2% ketoconazole is safe and effective in the treatment of infant seborrheic dermatitis. It reduces the impact of Malassezia spp on the skin surface, which is pivotal to the development of seborrheic dermatitis, and it has a non-steroidal anti-inflammatory effect that is equivalent to 1% hydrocortisone.
- The prescription of steroid-sparing treatment in seborrheic dermatitis is desirable, particularly in young infants.

Monica Tech

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Research Concepts:

Seborrheic Dermatitis




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Question 81: A 17-year-old running back with no medical history presents with left knee pain and swelling after feeling a "pop" while running during a football game. There was no contact involved in the mechanism of the injury. He states he had immediate pain and swelling after the injury. A physical exam of the affected knee shows a positive Lachman's test, negative McMurray's, negative valgus and varus maneuvers. What is the next best step in management?

Choices:

1. X-ray and full-leg cast
2. RICE (rest, ice, compression, elevation) and return to play within 1 week
3. Physical therapy with full weight-bearing on the affected leg
4. MRI of the knee and referral to orthopedic surgery

Moh'd Terbi

Answer: 4 - MRI of the knee and referral to orthopedic surgery

Explanations:

- An x-ray would be reasonable but is not the best imaging modality for this patient's injury. The injury was non-traumatic, and in a healthy young male, a spontaneous fracture is very unlikely. The patient would not be put in a full-leg cast without a fracture present. A knee-immobilizer would be a better option.
- This patient has an abnormal physical exam. A positive Lachman's maneuver increases the likelihood of an anterior cruciate ligament tear. The patient should rest, ice, and elevate the knee, but should not return to play without further evaluation.
- Physical therapy should be withheld until more evaluation and imaging has taken place. The patient should not bear full weight on an acutely injured knee, especially when injury or ligamentous tear is suspected. Physical therapy would be a main component of treatment once the patient has had surgical repair and approved by the surgeon.
- MRI would be the best imaging modality for this patient. A positive Lachman's test increases the suspicion for an anterior cruciate ligament (ACL) injury. MRI can show ligamentous injuries in high detail. This young healthy football player likely has an ACL tear, which would require surgical repair. A meniscal tear is commonly associated with pain, but swelling has delayed onset and can occur 1 to 2 days later. Ligamentous tears tend to have immediate swelling. This can differentiate the two, in addition to physical exam maneuvers.

Mohit Tehri

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Research Concepts:

Knee Effusion

StatPearls Knowledge Base

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Moh'd Terbi

Question 82: A mother brings her 5-year-old son to the emergency department with a history of general malaise and swelling on his scrotum that was not present yesterday. She says the patient is not himself, and he had a low-grade fever and cough two weeks ago. There is no significant past medical history. On examination, the patient is ill-looking and lethargic. He has palpable purpura on the buttocks and the lower legs. There is swelling of the right scrotum that is slightly tender to palpation. An abdominal examination reveals moderate tenderness to palpation. His urine contains a mild amount of red blood cells and protein. Which potential complication necessitates admission?

Choices:

1. Appendicitis
2. Cholecystitis
3. Volvulus
4. Intussusception

Moh'd Terbi

Answer: 4 - Intussusception

Explanations:

- Many gastrointestinal symptoms can occur in patients with Henoch-Schönlein purpura.
- In addition to nausea, patients can develop diarrhea, hematemesis, and intussusception.
- Bowel infarction, with or without perforation, can also occur.
- The occurrence of intussusception is critical and requires treatment either with barium or surgery.

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Research Concepts:

Moh'd Terbi

Henoch Schönlein Purpura




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Question 83: To prevent peanut allergy, at what age does the National Institute of Allergy and Infectious Disease recommend that babies with eczema be introduced to peanuts?

Choices:

1. Immediately after birth
2. 8 to 12 weeks after birth
3. At 4 to 6 months
4. When the infant is 12 months

Moh'd Terbi

Answer: 3 - At 4 to 6 months

Explanations:

- To counter the growing problem with peanut allergy, today infants with eczema should be offered peanut protein as early as age 4 to 6 months.
- The Infant should be evaluated with peanut specific-IgE antibodies or a skin prick test prior to the feeding to determine if peanut introduction is safe.
- If the skin prick test causes a wheal which is less than 2 mm in diameter, the peanut protein should be started at 4 to 6 months.
- If the wheal diameter is more than 4 mm, a referral to an allergist is recommended. By starting the first feeding at 4 to 6 months, these children grow out of their peanut allergy.

Mohd Terbi

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Research Concepts:

Peanut Allergy




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Question 84: A 16-year-old female with no past medical history presents to the clinic with palpitations, exertional dyspnea, and dizziness for the last few months. She had a syncopal episode a few days ago while playing basketball. Her physical exam showed blood pressure of 110/65 mmHg, heart rate of 74 beats/minute, respiratory rate of 16 breaths/minute, and temperature of 97.9 degree Fahrenheit. Cardiac examination revealed irregular S1S2. An electrocardiogram showed multiple premature ventricular contractions. Echocardiogram showed right ventricular wall motion abnormalities. Cardiac magnetic resonance imaging (MRI) showed evidence of right ventricular dilation and right ventricular aneurysm. What is the likely diagnosis for this patient?

Choices:

1. Hypertrophic cardiomyopathy
2. Stress-induced cardiomyopathy
3. Arrhythmogenic right ventricular cardiomyopathy
4. Cardiac sarcoidosis

Mehdi Terbi

Answer: 3 - Arrhythmogenic right ventricular cardiomyopathy

Explanations:

- This patient has arrhythmogenic right ventricular cardiomyopathy (ARVC). The findings on cardiac MRI of right ventricular wall motion abnormalities with right ventricular dilation and aneurysm are diagnostic of ARVC.
- In stress cardiomyopathy, the echocardiogram shows hypokinesia of the left ventricle. Cardiac MRI may show ventricular wall edema. Right ventricular aneurysm is not seen in stress-induced cardiomyopathy.
- In hypertrophic cardiomyopathy, the echocardiogram and cardiac MRI will reveal left ventricular septal wall thickening and diastolic dysfunction. A dilated right ventricle is not common in hypertrophic cardiomyopathy.
- The findings in cardiac sarcoidosis on echocardiogram and cardiac MRI are diastolic dysfunction and left ventricular wall thickening in the acute stage. In chronic cardiac sarcoidosis wall thinning of the left ventricle is a common finding.

Michi's Tchi

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Research Concepts:

Cardiomyopathy Imaging




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Question 85: A three-month-old is brought to the emergency department with a chief complaint of bug bites. On physical exam, there are multiple macules which when rubbed produce a wheal. What is the most likely diagnosis?

Choices:

1. Cafe au lait spots
2. Mosquito bite
3. Epidermolysis bullosa
4. Urticaria pigmentosa

Moh'd Terbi

Answer: 4 - Urticaria pigmentosa

Explanations:

- When the pigmented macules of urticaria pigmentosa are rubbed, mast cells degranulate producing urticaria; this is Darier sign and is virtually diagnostic for urticaria pigmentosa or mastocytosis.
- Urticaria pigmentosa is the most common form of cutaneous mastocytosis. It is a rare disease caused by excessive mast cells in the skin that produce hives when irritated. Red or brown spots are often seen on the skin around the chest and forehead. These mast cells, when irritated produce histamine triggering an allergic reaction that leads to hives localized to the area of irritation. Severe itching follows and scratching makes it worse. Symptoms can be mild (local itching and hives), moderate (diarrhea, tachycardia, nausea/vomiting, headache, and fainting), or life-threatening (vascular collapse).
- The majority of urticaria pigmentosa is caused by a point mutation at amino acid 816 of the proto-oncogene c-kit. C-Kit is a transmembrane protein when bound to mast cell growth factor signals the cell to divide. Mutations in position 816 of the c-kit result in a constant division signal being sent to the mast cells, resulting in abnormal proliferation. Several factors worsen symptoms including emotional stress, heat, friction, exercise, bacterial toxins, venom, eye drops containing dextran, NSAIDs, alcohol, and morphine.
- The disease is often diagnosed in infants when parents take their baby in for what appears to be bug bites. The bug bites are clumps of mast cells. Clinicians confirm the presence of mast cells by rubbing the baby's skin. If hives appear, this suggests urticaria pigmentosa. There is no cure. Most treatments for mastocytosis can be used to treat urticaria pigmentosa. Common anti-allergy medications reduce the mast cell's ability to react to histamine. At least one study suggests that nifedipine

Mohsen Tehrani

may reduce mast cell degranulation in patients with urticaria pigmentosa. Nifedipine is not approved for this indication by the FDA. Another mast cell stabilizer Gastrocrom, a form of cromoglicic acid has been used to reduce mast cell degranulation. Urticaria pigmentosa is a rare disease, affecting fewer than 200,000 people in the United States.

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Research Concepts:

Urticaria Pigmentosa



Moh'd Tarbi


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Question 86: A 16-year-old male is brought to your office by his parents. He reports a lack of energy, insomnia, and a feeling of "emptiness" for the past 4 weeks. His parents find him withdrawn and often irritable. Which of the following is true regarding the treatment of his condition?

Choices:

1. Pharmacological treatment can increase suicidal thoughts initially
2. Venlafaxine is a first-line drug
3. Initial follow after commencing treatment should be in one month
4. Escitalopram is contraindicated in treating this condition

Moh'd Terbi

Answer: 1 - Pharmacological treatment can increase suicidal thoughts initially

Explanations:

- Antidepressants can increase suicidal thoughts at the onset of therapy. Weekly monitoring is required initially.
- SSRIs are the first line of pharmacological therapy for depression in children.
- Fluoxetine and escitalopram are common first-line drugs in treating childhood depression.
- Venlafaxine is not preferred as a first-line treatment in childhood depression due to its adverse effect profile.

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Moh'd Terbi

Research Concepts:

Depression In Children




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Question 87: A 12-year-old male is referred to neurology for evaluation of seizures. His seizures started a few months ago with jerking activity in hand, sometimes leading to shaking all over his body, followed by loss of consciousness. He was noted to have staring episodes starting at the age of 9 and was diagnosed by his primary care provider with attention deficit hyperactivity disorder (ADHD). What is the next best step in management of this patient?

Choices:

1. Magnetic Resonance Imaging (MRI)
2. Electroencephalogram (EEG)
3. Laboratory investigations
4. Reassurance

Moh'd Terbi

Answer: 2 - Electroencephalogram (EEG)

Explanations:

- Juvenile Myoclonic Epilepsy (JME) is characterized by the presence of absence, myoclonic, and generalized tonic-clonic seizures.
- History provides most of the clues necessary for a diagnosis of Juvenile Myoclonic Epilepsy (JME). Physical examination is generally unremarkable. If there is any doubt about the diagnosis, an electroencephalogram (EEG) provides supporting evidence for diagnosing JME.
- If history, examination, and EEG is indicative of JME, imaging (with magnetic resonance imaging-MRI) is usually unnecessary as it tends to be normal. However, there are reports/studies about structural abnormalities in the cortex and subcortical grey matter in JME patients.
- Generalized tonic-clonic (GTC) seizures usually occur a few months after the onset of myoclonic seizures. Absence seizures are often the first seizures to manifest in JME. They tend to occur 3 to 5 years before the onset of myoclonic or GTC seizures, sometimes as early as 5 to 6 years of age.

Mohit Tariq

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Research Concepts:

Juvenile Myoclonic Epilepsy



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Moh'd Terbi

Question 88: A 6-year-old male is brought to the office because of learning difficulties. He seemed to do very well in pre-kindergarten and kindergarten. This year he has trouble staying on task. His teacher reports that he stares off frequently and wonders if there are any issues at home. The parents report spells in which he stops mid-sentence for a few seconds and has rapid blinking. Usually, he picks up the conversation where it last ended. What is the most likely diagnosis?

Choices:

1. Benign rolandic epilepsy
2. Attention-deficit/hyperactivity disorder
3. Childhood absence epilepsy
4. Simple partial seizure

Moh'd Terbi

Answer: 3 - Childhood absence epilepsy

Explanations:

- The history is classic for childhood absence epilepsy. The age of onset is typically between 4 and 10 years of age, with a peak between ages 5 and 7 years of age.
- Family members and teachers usually describe brief spells in which the patient has a loss of awareness, is unresponsive, and has behavioral arrest. They can describe these as "a blank stare."
- Episodes occur frequently, often 10 to more than 30 times throughout the day; therefore, they interfere with school performance.
- EEG is the next step in making the diagnosis of absence epilepsy.

Mohd Terbi

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Research Concepts:

Juvenile Absence Epilepsy




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Question 89: An 8-year-old girl presents with vaginal bleeding and pain in her left arm. Further examination reveals a cafe-au-lait macule at the umbilicus. What gene is most likely mutated?

Choices:

1. GNAS
2. MSH1
3. NOTCH
4. EGFR

Moh'd Terbi

Answer: 1 - GNAS

Explanations:

- The patient has McCune-Albright syndrome, which is characterized by precocious puberty, fibrous dysplasia, and cafe-au-lait macules.
- A mutation in GNAS causes McCune-Albright syndrome.
- The cafe-au-lait macules of McCune-Albright are midline, which differentiates them from cafe-au-lait macules of neurofibromatosis.
- GNAS encodes the alpha subunit of G-associated protein and is involved in cAMP signaling.

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Moh'd Terbi

Research Concepts:

McCune Albright Syndrome




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Question 90: A 17-year-old male patient presents 10 days after he was started on a neuroleptic drug. His mother states that he has had a high fever and his mental status is altered. He appears to be very stiff and is not verbally responsive. On physical exam, he has a fever of 39.8 C (103.6 F), is extremely diaphoretic, tachycardic, and tachypneic. He appears rigid and has a shuffling gait. He has no idea what is happening and appears very ill. Which of the following is not associated with the patient's ongoing condition?

Choices:

1. Myoglobinuria
2. Elevated creatine kinase
3. Autonomic instability
4. Akathisia

Moh'd Terbi

Answer: 4 - Akathisia

Explanations:

- Based on the clinical features and history, it is likely that the patient has neuroleptic malignant syndrome.
- Akathisia is a movement disorder characterized by a feeling of inner restlessness and a compelling need to be in constant motion.
- People with akathisia are unable to sit or keep still, complain of restlessness, fidget, rock from foot to foot, and pace.
- In neuroleptic malignant syndrome, there is no akathisia, which can also be caused by neuroleptic drugs.

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Moh'd Terbi

Research Concepts:

Neuroleptic Malignant Syndrome




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Question 91:

A 3-year-old child presents with excessive body hair, breast development, and body odor. Examination demonstrates erythematous papules and open and closed comedones on the cheeks, forehead, and chin. What is the most appropriate next step in the evaluation of this child?

Choices:

1. Obtain a dehydroepiandrosterone (DHEA) level
2. Obtain a thyroid-stimulating hormone level
3. Obtain a gonadotropin-releasing hormone level
4. Serum protein electrophoresis

Moh'd Terbi

Answer: 1 - Obtain a dehydroepiandrosterone (DHEA) level

Explanations:

- Pediatric acne subdivides into four subgroups based on the age of onset: neonatal acne, infantile acne, mid-childhood acne, and preadolescent acne. Acne is rare in prepubertal children aged 2-6 (mid-childhood acne). An endocrinologist should be consulted to rule out possible hyperandrogenism.
- Hormone abnormalities in children with acne are associated with congenital adrenal hyperplasia, Cushing syndrome, 21-hydroxylase deficiency, precocious puberty, androgen-secreting tumors, medications, and premature adrenarche.
- If there are signs of virilization, the following screening tests may be useful: dehydroepiandrosterone (DHEA), testosterone, 17-hydroxyprogesterone, LH, FSH, prolactin, and x-ray bone age measurement.
- After laboratory evaluation, treatment consists of topical agents such as benzoyl peroxide, topical retinoids, and erythromycin gel. In severe cases, oral erythromycin, trimethoprim-sulfamethoxazole, or isotretinoin may be required.

Mohit Terki

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Research Concepts:

Infantile Acne




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improvement.

Moh'd Terbi

Question 92: A 20-month-old male has had a cough, runny nose, watery eyes, and decreased appetite for 5 days. He now has an abrupt onset, high-grade fever. The exam shows a fever, abdominal distention, grunting, intercostal retractions, rhonchi in the left lung, and dullness to percussion. The chest radiograph shows a left lower lobe infiltrate. Which of the following is the most likely infectious organism?

Choices:

1. Streptococcus pneumoniae
2. Mycoplasma pneumoniae
3. Moraxella catarrhalis
4. Haemophilus influenzae

Moh'd Terbi

Answer: 1 - Streptococcus pneumoniae

Explanations:

- Pneumonia in children usually results from Streptococcus pneumoniae.
- With word-wide immunization, Haemophilus influenzae is a rare cause of community-acquired pneumonia in children.
- Mycoplasma pneumoniae is a more important cause in younger adults.
- Moraxella catarrhalis is among the top three causes of otitis media in children.

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Moh'd Terbi

Research Concepts:

Bacterial Pneumonia




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Question 93: A two-year-old boy is referred for a hearing test. He has met all developmental milestones and is up to date with all the required immunizations. His parents have noticed that he snores at night. He is in daycare, having missed several days during this past winter due to upper respiratory illness. He is not tired during the day and seems extraordinarily active at daycare. He seems to translocate the 'r' and 'w' sounds in his native English. Hearing tests reveal a bilateral conductive hearing loss that persists on follow-up at three months. What treatment option is likely to help his symptoms?

Choices:

1. No intervention required
2. Adenoidectomy and grommet insertion
3. Hearing aid
4. Antibiotics

Moh'd Terbi

Answer: 2 - Adenoidectomy and grommet insertion

Explanations:

- Enlarged adenoids can contribute to otitis media with effusion (glue ear).
- Glue ear typically presents with bilateral conductive hearing loss and flattened (type A) tympanograms.
- In the majority of cases, no surgical intervention is required as symptoms improve as the Eustachian tube matures.
- The persistence of symptoms beyond three months is an indication to perform a surgical intervention. There can be long-term impact on language development, progress in school, and social skills acquisition if left untreated. Grommets can be inserted to ventilate the middle ear with or without adenoidectomy if evidence of adenoidal hypertrophy.

Mohd Terbi

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Research Concepts:

Pediatric Hearing Loss




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Question 94: A 2-year-old uncircumcised male is brought in by his parents, who have noticed that the child has been grabbing his diaper area and fussing. Over the past day, they have noticed that his foreskin has become markedly swollen and red. On exam, the foreskin is soft and edematous, with slight erythema diffusely over the edematous foreskin. No focal lesions are present. The skin retracts easily from the glans penis, and no ulcerations or discharge are noted. The parents report no previous episodes of swelling and no change in routine except a family picnic at a park the day before. What is the most likely diagnosis?

Choices:

1. Paraphimosis
2. Phimosis
3. Summer penile syndrome
4. Balanitis

Moh'd Terbi

Answer: 3 - Summer penile syndrome

Explanations:

- Summer penile syndrome, or lion's mane penis, is a hypersensitivity reaction in which the foreskin of uncircumcised males or the skin covering the shaft of the penis in circumcised males becomes markedly edematous and pruritic due to chigger bites. The skin is often erythematous and excoriated because of the patient's scratching. A minority of patients experience dysuria and decreased urine flow. Chigger bites are identified in most but not all cases.
- The diagnosis of summer penile syndrome should be based on the history of exposure to potential mite habitats and the exclusion of other potential causes of penile swelling. Typical patients are boys from the ages of 6 months to 12 years, though the condition might also occur in adults. Almost all cases will occur during the summer months or early fall. There will usually be a history of exposure to woods, fields, lawns, or gardens. The identification of papules, sometimes in a linear pattern, consistent with chigger bites, may aid in the diagnosis.
- During the physical examination, it is important to exclude phimosis, paraphimosis, cellulitis, or abscess. The foreskin, though edematous, should be easily retracted from the glans and loose enough to pull forward over the glans. There should not be spreading erythema from areas that are edematous and excoriated. There should be no discrete fluid collection that might represent an abscess. Small vesicles, pustules, or papules from the bite may be identified. In sexually active patients, consideration should be given to excluding sexually transmitted infections.
- The treatment of summer penile syndrome is conservative, usually restricted to cold compresses, and oral antihistamines with or without the cautious use of topical corticosteroid cream. Bacterial superinfections of the lesions are rare.

Mohsen Tavoli

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Research Concepts:

Chigger Bites

StatPearls Knowledge Base

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Moh'd Terbi

Question 95: A 3-year-old girl with refractory epilepsy currently on clobazam, carbamazepine, sodium valproate, and levetiracetam continues to have poor seizure control. Her parents wanted her to be tried on cannabidiol as an add-on anti-seizure medication. Which of the following drug levels will need to be checked and adjusted due to the potential to increase therapeutic levels?

Choices:

1. Clobazam
2. Sodium valproate
3. Levetiracetam
4. Carbamazepine

Moh'd Terbi

Answer: 1 - Clobazam

Explanations:

- Cannabidiol (CBD) increases levels of clobazam (CLB) and N-desmethylclobazam as CLB and CBD are both metabolized in the cytochrome P450 (CYP) system in the liver, particularly CYP3A4.
- Interaction can produce about a 50% or more increase in levels of clobazam. Levetiracetam, carbamazepine, and valproate do not have clinically significant interactions with cannabidiol.
- The increased levels can cause significant sedation, and drug dose adjustments may be required. However, Animal studies have shown CBD to increase clobazam anticonvulsant activity via CYP3A4 activity, but only when an anticonvulsant dose of CBD was used; sub-anti-convulsant CBD dosing did not promote increased anticonvulsant effects despite increased serum clobazam concentrations.
- In combination with valproate or clobazam, CBD can result in increased liver enzymes, notably ALT and AST. Patients receiving these combinations may benefit from additional liver enzyme monitoring.

Mon'd Terry

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Research Concepts:

Antiepileptic Drug Monitoring



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Moh'd Terbi

Question 96: A 5-year-old child has a contaminated deep cut on his hand and leg sustained after playing flag football and running into a barbed-wire fence. He had never received a tetanus vaccine before now. What vaccine should he receive?

Choices:

1. Booster tetanus toxoid vaccine only
2. Booster tetanus toxoid and tetanus immunoglobulin
3. Tetanus immunoglobulin and DTaP series
4. Tetanus immunoglobulin only

Moh'd Terbi

Answer: 3 - Tetanus immunoglobulin and DTaP series

Explanations:

- Unvaccinated patients with contaminated wounds need tetanus immunoglobulin.
- The vaccine series should be completed. The patient should receive DTaP today and follow up for dose 2 in 4 weeks.
- Tetanus is an infection that is characterized by muscle spasms, also known as lockjaw or trismus. The disease most commonly occurs in those who are not vaccinated or in the elderly with waning immunity. Currently, vaccination campaigns have decreased the incidence and prevalence of tetanus worldwide. The spasms from tetanus may last for minutes or may occur for up to 4 weeks, with spasms starting in the face and then descending to the rest of the body. Symptoms are caused by toxins produced by the bacterium, Clostridium tetani. There are four main types of tetanus: generalized, neonatal, local, and cerebral tetanus, based on clinical features. Tetanus, a clinical diagnosis, has no particular laboratory test to confirm the diagnosis. Treatment includes tetanus immunoglobulin, antibiotic therapy, neuromuscular blockade, and supportive care for respiratory complications, autonomic instability, and muscle spasms. Full tetanus immunization is required after recovery from the disease. Long-term sequelae have been reported from survivors.
- The tetanus vaccination has been considered as a routine vaccine in addition to pneumococci and influenza vaccines among older adults. Protection against tetanus by vaccines is essential because there is no natural immunity against tetanus. The tetanospasmin toxin is very lethal and will cause death before initiating an immune response. After recovery from an infection, patients must receive full immunity. In addition, post-exposure prophylaxis can also be provided through tetanus

Mohit Tekchandani

toxoid with or without tetanus immunoglobulin intravenous or intramuscular, depending on the wound.

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Research Concepts:

Tetanus




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Moh'd Terbi

Question 97: A 17-year-old patient who has been receiving treatment for mallet fracture presents to the clinic for a deformity of her affected finger after taking off her splint two weeks ago. On exam, the distal interphalangeal joint is flexed, and the proximal interphalangeal joint is hyperextended. What complication of mallet fracture does she have?

Choices:

1. Jersey finger
2. Extensor lag
3. Swan neck deformity
4. Recurrence of mallet finger

Moh'd Terbi

Answer: 3 - Swan neck deformity

Explanations:

- Swan neck deformities are due to a disruption of the volar plate caused by the disrupted extensor tendon.
- On physical exam, the distal interphalangeal joint is abnormally flexed, and the proximal interphalangeal joint is in a hyperextended position.
- Swan neck deformities can occur following either nonsurgical or surgical management of mallet fractures.
- Swan neck deformities can be treated conservatively with splinting or with operative management.

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Moh'd Terbi

Research Concepts:

Mallet Finger Injuries




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Question 98: A 4-month-old boy presents with possible developmental delay. He appears calm, but he cannot make eye contact, he does not demonstrate a social smile, and he has an upturned nose. The exam is remarkable for thickened gingiva, corneal clouding, mild jugular venous distension, and hepatosplenomegaly. His lungs are clear to auscultation, and all primitive reflexes are normal. Laboratory tests, including complete blood count and complete metabolic profile, are within normal limits. The parents are informed that their child has a congenital disorder. Workup is done to diagnose the disease definitively, and a referral is placed to a pediatric cardiologist for further management and recommendations for the restrictive cardiomyopathy. What is the most likely congenital diagnosis?

Choices:

1. Fabry disease
2. Gaucher disease
3. Hurler disease
4. Hunter disease

Moh'd Terbi

Answer: 3 - Hurler disease

Explanations:

- Hurler disease is one of the congenital causes of restrictive cardiomyopathy.
- Hurler disease is distinguished from other mucopolysaccharidoses by the presence of corneal clouding.
- The disease is characterized by a deficiency in alpha-L-iduronidase, leading to an accumulation of heparan sulfate and dermatan sulfate.
- Restrictive cardiomyopathy has many causes, including infiltrative diseases, storage diseases, and non-infiltrative diseases.

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Moh'd Terbi

Research Concepts:

Restrictive Cardiomyopathy




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Question 99: A 5-year-old male presents with gradual onset of right scrotal pain. His family denies any fever or trauma. On examination, the right testis and epididymis are tender and slightly swollen. There is focal blue discoloration of the scrotal skin on the same side. He denies dysuria. The urinalysis is normal. A scrotal ultrasound demonstrates decreased blood flow to the right testicular appendix. What is the most appropriate treatment?

Choices:

1. Immediate surgical exploration
2. Antibiotics for two weeks and ibuprofen
3. Ibuprofen and ice
4. Incision and drainage

Moh'd Terbi

Answer: 3 - Ibuprofen and ice

Explanations:

- The acute scrotum is typically caused by one of three conditions: (1) Torsion of the testis, (2) Torsion of the appendix (testis or epididymitis), or (3) Infection (epididymo-orchitis). The acute scrotum can be easily misdiagnosed which is why imaging is generally recommended in all cases, typically an ultrasound of the scrotum.
- Torsion of the appendix testis or epididymis usually presents before puberty, with signs and symptoms like the ones in the question stem. The blue dot sign is a classic physical exam finding in up to 52% of boys with a torsed appendage. Nonsteroidal anti-inflammatory drugs and ice are the mainstays of treatment. Symptoms typically resolve in about one week.
- Torsion of the testis is a surgical emergency. Although it can happen at any age, it is more common after puberty. Salvageable testis usually presents with acute severe pain of a few hours duration with no scrotal skin changes. With a typical history and examination, surgical exploration is warranted instead of Doppler ultrasound.
- Infection usually occurs in sexually active teenagers and presents with dysuria, a positive urinalysis, and fever.

Monica Terry

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Research Concepts:

Appendix Testes Torsion



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Moh'd Terbi

Question 100: Which of the following clinical scenarios more likely describes a case of gastroenteritis rather than Jamaican Vomiting Sickness?

Choices:

1. A 48-year-old male with a history of malnutrition presents to the Emergency Department after suffering 2 seizures; blood glucose is 35; after resuscitation, he states he ate an Ackee fruit earlier that morning, but he is adamant that he did experience any vomiting or GI symptoms
2. A 35-year-old female who presents with abdominal cramping, vomiting, and diarrhea following eating at a Jamaican salad bar; her blood glucose is 63
3. A 10-year-old boy presents with altered mental status and vomiting; his parents saw him drinking water out of a bucket storing Ackee fruit earlier in that day; he did not consume any of the fruit
4. A 36-year-old female with no past medical history presents in the evening with altered mental status and hypoglycemia; friends reported she had vomiting earlier that morning, but no diarrhea; and friends state she was asymptomatic for most of the afternoon

Mon'a Terry

Answer: 2 - A 35-year-old female who presents with abdominal cramping, vomiting, and diarrhea following eating at a Jamaican salad bar; her blood glucose is 63

Explanations:

- Despite its name, there are some cases of Jamaican Vomiting Sickness where vomiting may be absent. This scenario describes a patient at high risk for Ackee fruit toxicity (malnutrition) and several other cardinal features (seizures, altered mental status, hypoglycemia). It is important to remember the absence of vomiting does not entirely rule out Ackee fruit toxicity.
- Most cases of gastroenteritis will have a combination of vomiting, diarrhea, and abdominal discomfort. Diarrhea is rare with Ackee fruit toxicity so if it is present you should expand your differential diagnosis. It is important to remember that gastroenteritis patients may also experience hypoglycemia as well.
- Ackee fruit toxicity may occur in patients who have not ingested the actual Ackee fruit. Hypoglycin A has been found in water previously in contact with unripe Ackee fruit. It is important to remember that pediatric patients are at increased risk of toxicity.
- Vomiting secondary to Ackee fruit toxicity typically occurs within several hours. The patient may then rapidly progress to hypoglycemia and altered mental status; however, there may be an asymptomatic period following the initial GI distress. Ackee fruit toxicity should be considered in any patient with a history of vomiting, seizures, and hypoglycemia.

Mona Terki

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Research Concepts:

Ackee Fruit Toxicity

StatPearls Knowledge Base

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Moh'd Terbi

Section 2

Question 101: An 8-year-old girl is brought in by her parents for jaundice. The parents state the child's skin turned yellow three days ago and deny any specific inciting factors. Past medical history is significant for a normal birth, severe obesity, and recurrent bacterial infections. The parents report the child has a huge appetite, she often eats in secret, and they find stashes of food she has hidden throughout the house. The patient has had no previous surgery and is on no medication. Vital signs are temperature 97.9 F (36.6 C), heart rate 79/minute, blood pressure 121/84 mmHg, respiratory rate 19/minute, and oxygen saturation 99% on room air. The physical exam shows purplish-black areas of the neck and axillary folds and severe obesity. Significant labs are a fasting insulin level of 49 mIU/L and serum LDL-C of 199 mg/dl. This patient is most at risk for developing which of the following conditions?

Monica Terbi

Choices:

1. Delayed puberty
2. Diabetes insipidus
3. Hypothyroidism
4. Peptic ulcer disease

Answer: 1 - Delayed puberty

Explanations:

- Complete leptin deficiency results in the clinical phenotypes of severe obesity, impaired satiety, intense hyperphagia, constant food-seeking behavior, recurrent bacterial infections, hyperinsulinemia, liver steatosis, dyslipidemia, and hypogonadotropic hypogonadism. Hypogonadotropic hypogonadism results in delayed onset of puberty.
- The primary physiologic role of leptin is to serve as a marker of long-term energy stores for the central nervous system (CNS). As the amount of leptin decreases, the CNS interprets the decline as a signal of energy deficit. It responds by increasing hunger and promoting energy-sparing mechanisms.
- Leptin replacement has shown a reversal of obesity in leptin-deficient conditions. It has limited efficacy for reversal in typically obese individuals.
- Diet-induced obesity is associated with hyperleptinemia and leptin resistance.

Mon'd Terbi

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Research Concepts:

Obesity in Pediatric Patients




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Question 102: A female presents with acute onset of pain, erythema, and swelling along the medial canthus of the right eye. On examination, her conjunctiva is injected, and upon palpation of the medial canthus, a purulent discharge is noted from the puncta. She has no pain with extraocular eye movements. What is the most likely diagnosis?

Choices:

1. Dacryoadenitis
2. Dacryocystitis
3. Preseptal cellulitis
4. Orbital cellulitis

Moh'd Terbi

Answer: 2 - Dacryocystitis

Explanations:

- Dacryoadenitis is an inflammation of the lacrimal glands in the supratemporal orbit. Although symptoms are similar to dacryocystitis, the location is key in making the correct diagnosis.
- Dacryocystitis is caused by inflammation of the nasolacrimal sac in the medial canthal region. Symptoms typically include the acute onset of pain, erythema, and swelling of the lacrimal sac with associated purulent discharge. If left untreated, dacryocystitis can lead to preseptal cellulitis, orbital cellulitis, meningitis and even cavernous venous thrombosis.
- Preseptal cellulitis is characterized by the lack of chemosis, conjunctivitis but with the presence of lid edema and erythema. The patient will not have pain with extra-ocular eye movements.
- Orbital cellulitis is characterized by swollen eyelids with erythema with associated chemosis, conjunctival injection, and pain with extraocular eye movements.

Mohit Tekh

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Research Concepts:

Dacryocystitis




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Question 103: A 17-year old female presents to the emergency department complaining of bilateral foot pain. She had just spent 4 days at an outdoor music festival where the temperatures were hovering around 50 degrees. She describes a lot of mud as there were some rain showers throughout the festival. She has not changed her socks or shoes since her bag was stolen on the first day of the festival. Her feet are swollen, with patches of erythema and pallor and she describes a decrease in sensation in both feet. She is afebrile. What is the likely diagnosis?

Choices:

1. A fungal infection
2. Trench foot
3. Cellulitis
4. An allergic reaction to the dye in her boots

Moh'd Terbi

Answer: 2 - Trench foot

Explanations:

- Trench foot is caused by prolonged exposure to cold but above freezing temperatures, wet and sometimes unsanitary conditions.
- A thorough history and physical is essential in delineating between trench foot and the other diagnoses. It usually presents with a history of numbness and swelling. Non-freezing temperatures, constant moisture, and unsanitary conditions are all hallmark presentations of trench foot.
- Although trench foot is rare in today's society, anyone that is unable to keep their feet dry and may not have accessibility to clean socks and dry shoes may be at risk of developing the condition.
- Trench foot usually presents with erythematous areas mixed with some pallor as well as some swelling and a decrease in sensation. Advance stages of trench foot can present with ischemic changes to the tissues.

Monica Terbi

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Research Concepts:

Trench Foot




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Question 104: A 2-year-old female is referred to the genetics clinic. She was born full-term, and there was no significant birth or family history. In her first year of life, she underwent cranial vault remodeling for craniosynostosis. On examination, she is alert and breathing comfortably. Facial examination reveals mild bilateral proptosis with hypertelorism, maxillary hypoplasia and a high-arched palate, a well-healed bicoronal incision, and syndactyly. Which of the following conditions is most often associated with this genetic syndrome?

Choices:

1. Retinitis pigmentosa
2. Interstitial keratitis
3. Strabismus
4. Lid retraction

Moh'd Terbi

Answer: 3 - Strabismus

Explanations:

- Strabismus, specifically V-pattern, is extremely common in any of the craniosynostosis syndromes.
- In this case of Apert syndrome, the patient should be followed by an ophthalmologist to evaluate and treat strabismic amblyopia and its complications as needed.
- Ptosis is the more common lid abnormality in Apert syndrome. Children are noted to adopt a chin-up position to compensate for the ptosis and visual field obstruction caused by the lower eyelid position.
- Retinitis pigmentosa has not been specifically associated with Apert syndrome. Interstitial keratitis is not common in Apert syndrome. However, patients with Apert syndrome may develop exposure keratopathy that may over time cause corneal scarring. This could be confused with a remote history of keratitis.

Moh. Terbi

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Research Concepts:

Apert Syndrome




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Question 105: A 3-year-old male is brought in for frequent falls.

His mother reports that he began to walk at the age of 15 months. She also reports that an uncle had a disorder in which he was in a wheelchair at 13 years of age and died of a "heart problem" in his twenties. Which of the following would be least likely during an evaluation of this child?

Choices:

1. Increased creatine kinase levels
2. Hypertrophy of his calves
3. Decreased nerve conduction velocities on electromyography
4. Increased aspartate aminotransferase levels

Moh'd Terbi

Answer: 3 - Decreased nerve conduction velocities on electromyography

Explanations:

- In those with Duchenne muscular dystrophy, serum creatine kinase (CK) levels are elevated before the development of clinical symptoms and signs and may be elevated in newborns. Levels peak by 2 years of age and can be more than ten to twenty times above the upper limit of normal. As age and the disease progress, serum CK levels decrease because muscle is progressively replaced by fibrosis and fat. In this 3-year-old patient, increased creatine kinase levels can be expected.
- A muscle biopsy will demonstrate endomysial connective tissue proliferation; scattered degeneration and regeneration of myofibers; muscle fiber necrosis with mononuclear cell infiltrate; and replacement of muscle with adipose tissue and fat.
- Calve hypertrophy can be expected in a 3-year-old with Duchenne muscular dystrophy. Motor and sensory nerve conduction velocities are normal, and denervation is not present.
- Alanine aminotransferase (ALT) and aspartate aminotransferase (AST) are highly concentrated in muscle cells. Duchenne muscular dystrophy can lead to an elevation in ALT and AST. The elevation is most striking during the early stages of the disease.

Mehri Tehrani

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Research Concepts:

Duchenne Muscular Dystrophy

StatPearls Knowledge Base

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Moh'd Terbi

Question 106: A 9-month old boy was referred to dermatology because of severe episodes of sunburns after minimal sun exposure. Examination showed a cachectic boy having a long face, a small protruding chin, and big ears. The boy also had enophthalmia and hypotonia of the muscles. What diagnosis should be first considered?

Choices:

1. Xeroderma pigmentosum
2. Cockayne syndrome
3. Trichothiodystrophy
4. Rothmund Thomson syndrome

Moh'd Terbi

Answer: 2 - Cockayne syndrome

Explanations:

- Cockayne syndrome belongs, like xeroderma pigmentosum and trichothiodystrophy, to the group of diseases that affect DNA repair by nucleotide excision (NER).
- The most common form of Cockayne syndrome (type I) occurs during the first year of life.
- Children have very thin skin and sensitive to ultraviolet rays. The slightest exposure causes severe sunburns that can sometimes leave scars or hyperpigmented spots.
- Dysmorphic features include a long face, a small protruding chin, and big ears. Enopthtalmia is common because of the disappearance of the fat that is normally behind the eyeball. The muscles are often insufficiently tonic (hypotonia), and the reflexes are abnormal.

Moh'd Terbi

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Research Concepts:

Cockayne Syndrome




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Question 107: A 2-year-old female presents to the emergency department with a dry cough and a low-grade fever. Over the last 2 days, she has become very irritable and refused to eat. The mother reports that the girl also had a runny nose. On examination, the child has significant wheezing and is tachycardic. A test of the nasal discharge shows a respiratory syncytial virus infection. What condition is she at risk for developing later in life?

Choices:

1. Lung cancer
2. Lung abscess
3. Bronchiectasis
4. Asthma

Moh'd Terbi

Answer: 4 - Asthma

Explanations:

- Infants hospitalized with respiratory syncytial virus (RSV) have a higher risk for subsequent wheezing later in life.
- Some studies question whether reactive airway disease is already present in patients wheezing in the presence of RSV at age less than 2 years.
- Some studies show that fewer infants treated with palivizumab develop wheezing later in life than those who do not receive palivizumab, supporting the idea that RSV predisposes to later asthma and atopy.
- Current evidenced-based practice does not support the use of ribavirin. Ribavirin is an antiviral with limited positive effects that has been linked to adverse effects for patients. The risk of adverse effects to the patient and provider likely outweigh any benefits of the drug, however, in the case of immunocompromised patients with severe RSV, it may be considered. Palivizumab is an immunization recommended for RSV in high-risk infants and children no older than 24 months. Its efficacy has been established.

Moni's Tarki

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Research Concepts:

Respiratory Syncytial Virus Infection



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Moh'd Terbi

Question 108: After suffering a severe seizure, a patient is seen in the emergency room with an inability to move his right shoulder. He complains of pain when he tries to move the shoulder. The arm is internally rotated and adducted. You decide to order plain x-rays. In which view on the x-ray is this type of dislocation frequently missed?

Choices:

1. Axillary
2. Scapular Y view
3. Velpeau
4. Wallace

Moh'd Terbi

Answer: 2 - Scapular Y view

Explanations:

- The shoulder is the most frequently dislocated joint in the body. The reason for this is that the shoulder has a wide range of motion, which also decreases stability. The integrity of the shoulder is maintained by the glenoid labrum, the glenohumeral joint capsule, and muscles of the rotator cuff.
- Posterior shoulder dislocations are rare and often seen after a seizure, electrocution or trauma.
- The plain x-ray is adequate to make the diagnosis but the frontal view is not sensitive and one may miss the dislocation since the humeral head is often normally aligned with the glenoid.
- An axillary view is needed to make a diagnosis of a posteriorly dislocated shoulder. other options include the Velpeau or the Wallace View. The scapular Y view is unreliable to make a diagnosis of posterior shoulder dislocations.

Mahir Terbi

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Research Concepts:

Shoulder Dislocations Overview




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Question 109: A 17-year-old patient presented to the emergency department following a crush injury to their thorax and abdomen. They undergo a CT scan as part of their trauma workup. The radiologist is concerned that the patient has a diaphragmatic hernia. Which of the following symptoms is most likely?

Choices:

1. Constipation
2. Shortness of breath
3. Shoulder tip pain
4. Visual disturbance

Moh'd Terbi

Answer: 2 - Shortness of breath

Explanations:

- A diaphragmatic hernia can result in increased thoracic pressure which can lead to respiratory symptoms, including shortness of breath.
- Shoulder tip pain could potentially occur as a result of diaphragmatic irritation but in the case of crushing thoracic and abdominal trauma, this would likely not be noticed by the patient.
- It is important to note that shortness of breath is not a specific sign of a diaphragmatic hernia, especially in a trauma case, and there are more common causes that need to be explored and considered first. In this case, there is CT evidence of diaphragmatic herniation.
- Additional signs to look for include tracheal deviation and reduced chest expansion on the side of the herniation.

Mon'd Terbi

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Research Concepts:

Diaphragmatic Hernia




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Question 110: A 32-year-old G1P1 female delivers a healthy 37-week female. The newborn is in no distress and has APGAR scores of 8 and 9 at 1 and 5 minutes, respectively. The heart and lung exams reveal no significant findings. The red reflex is intact; the Ortolani and Bartlow tests reveal no hip click, reflexes are intact, and an enlarged clitoris. Two weeks later, the mother brings the infant to the emergency department due to poor feedings and vomiting. Physical examination reveals the baby has not reached her initial birth weight. Which of the following is most likely expected on the patient's laboratory examination?

Choices:

1. Hyponatremia
2. Hypoglycemia
3. Hypocalcemia
4. Hypernatremia

Moh'd Terbi

Answer: 1 - Hyponatremia

Explanations:

- In patients with 21-hydroxylase deficiency, the lack of this enzyme in the adrenal glands causes changes in steroid production.
- Precursors used to form cortisol and aldosterone accumulate and are converted to androgens, thus leading to the virilization seen in these patients.
- Aldosterone deficiency causes salt wasting in these patients.
- Hypoglycemia can occur in babies born to mothers with gestational diabetes because the upregulation of insulin needed in the baby while in utero is not required in such high doses after birth, thus causing a drop in glucose. The mother does not have gestational diabetes, and the infant is not showing signs of hypoglycemia such as apnea, hypothermia, lethargy, or seizures. Glucose abnormalities are not seen in patients with 21-hydroxylase deficiency. Hypocalcemia is seen in children with DiGeorge syndrome due to hypoplasia of the parathyroid glands. This patient is not showing signs of hypocalcemia such as hypotonia, tachycardia, tachypnea, poor feeding, apnea tetany, or seizures. There are also no changes seen in calcium levels in patients with 21-hydroxylase deficiency. The lack of aldosterone in patients with 21-hydroxylase deficiency causes salt wasting. Aldosterone is in charge of retaining salt, and in these patients, there is a deficiency of aldosterone leading to hyponatremia rather than hypernatremia.

Won't Terry

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Research Concepts:

21 Hydroxylase Deficiency




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Question 111: A mental health professional is running a group therapy program at her office every Thursday afternoon for foster children who were neglected in their home of origin. She plans to have several areas set up to observe their play and how they interact. The ages of the children range from one to five years old. Which of the following is most likely to be seen?

Choices:

1. A three-year-old girl is rocking a doll. She is pretending she is the mother and is giving the doll a bottle and rocking her
2. An 18-month old girl and a 2-year-old girl are playing in a child size play kitchen together. One is stirring a pot while the other adds pretend food to the pot
3. A group of three-year-old boys plays together the entire hour of group therapy with no conflict, sharing the toy that they are interested in freely with their playmates
4. A one-year-old boy is playing alongside another one-year-old boy at a tool workshop. They are doing the same task but not interacting or engaging with each other

Mohit Ferbi

Answer: 1 - A three-year-old girl is rocking a doll. She is pretending she is the mother and is giving the doll a bottle and rocking her

Explanations:

- Between the ages of 1 and 2, imaginative or pretend play begins and persists throughout childhood. Therefore, a three-year-old would have mastered and exhibit fantasy play on a regular basis. The three-year-old in this scenario is exhibiting pretend or fantasy play.
- Cooperative play, where two or more children share the same fantasy during the play, emerges between the ages of 3 and 6 years old. Before this time, you would expect to see parallel play, where two or more children are playing alongside each other but do not share the same fantasy as they play.
- Between the ages of 2 and 3 years old, the autonomous self- develops, thus sharing declines. In a group of three-year-olds, one would expect to see competition to possess toys.
- A one-year-old child would be expected to exhibit solitary play, not parallel play.

Mona Terbi

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Research Concepts:

Peer Play




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Question 112: A 17-year-old male presents to the emergency department with worsening respiratory symptoms. the patient has no significant past medical or surgical history. He complains that symptoms are worse at night or when he is lying down. Chest x-ray shows a widened mediastinum with a moderate size pleural effusion on the right side of the chest. What tumor most likely responsible for these findings?

Choices:

1. Neuroblastoma
2. Non-Hodgkin lymphoma
3. Seminoma
4. Ewing sarcoma

Moh'd Terbi

Answer: 2 - Non-Hodgkin lymphoma

Explanations:

- Pleural effusion is the accumulation of fluid in the pleural cavity.
- Malignancy is the third leading etiology of pleural effusion in the pediatric population
- Malignancy can be primary or metastatic. Pleural effusion secondary to malignancy can be unilateral or bilateral.
- Lymphoma is the most common malignancy associated with pleural effusion. About 13% of all childhood malignancy is attributable to lymphoma. Lymphoma is also the most common cause of mediastinal mass in children. Approximately 60% of lymphoma is non-Hodgkin lymphoma while the remaining 40% is Hodgkin lymphoma

Mahdi Terbi

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Research Concepts:

Pediatric Malignant Pleural Effusion




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Question 113: A 17-year-old female presents to the clinic with an eight-week history of scattered smooth 1-2 mm pink papules on the perioral cheeks and chin. The papules are not pruritic. The patient is hesitant to try any prescribed medications without first ruling out if any of her current personal care products could be an etiologic factor. Which of the following products should be recommended that she discontinues to see if this leads to the improvement of her rash?

Choices:

1. Fluoride toothpaste
2. Antiseptic mouthwash
3. Chemical sunscreen
4. Oral contraceptive pills

Moh'd Terbi

Answer: 1 - Fluoride toothpaste

Explanations:

- Perioral dermatitis presents as either small inflammatory papules or red, scaly patches in the perioral skin sparing the vermillion border.
- Possible triggers to perioral dermatitis include fluoride in dentifrices, cinnamon flavorings in candy or chewing gum, occlusive moisturizers, physical sunscreens, lipstick, and cosmetics.
- In some patients, the rash may resolve completely after discontinuation of an offending agent including topical steroids and skincare products. Frequently, however, perioral dermatitis can be a chronic relapsing condition and often requires long-term treatment.
- Perioral dermatitis is most common in younger adult women. Given the female predominance with this condition, hormonal factors have been considered in the etiology. Interestingly, oral contraceptive pills have been associated with improvement of perioral dermatitis.

Mona Terki

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Research Concepts:

Perioral Dermatitis




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improvement.

Moh'd Terbi

Question 114: A 1-year-old female was brought in by her parents to the emergency department (ED) for fever. Over the last few months, the patient has been admitted for urinary tract infection and pneumonia. According to the parents, the patient has refused to feed for the past two days and became lethargic in the morning. The patient's temperature was 101 degrees F in the ED. She was started on broad-spectrum antibiotics and IV fluids. Chest x-ray was done and showed dextrocardia and recurrent pneumonia. What syndrome is most consistent with these findings?

Choices:

1. Heterotaxy syndrome
2. Barlow syndrome
3. Leriche's syndrome
4. Eisenmenger's syndrome

Moh'd Terbi

Answer: 1 - Heterotaxy syndrome

Explanations:

- Heterotaxy syndrome consists of cardiac and non-cardiac anomalies including anatomic asplenia.
- The most common cause of death in heterotaxy syndrome patients is due to cardiac complications.
- Heterotaxy syndrome patients have asymmetry of the thoracic and abdominal organs. The arrangement of the organs is different from the general population.
- Heterotaxy syndrome is also classified under those with asplenia and polysplenia. These patients are also prone to severe pneumococcal infection due to an abnormality of the spleen function.

Mohd Terbi

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Research Concepts:

Asplenia




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Question 115: The mother of a three-year-old male patient is concerned because of fever to 102 F taken orally and spreading erythema from a bite site one hour after the child sustained a mosquito bite while playing outside. Which medication is preferred for this condition?

Choices:

1. Clindamycin
2. Prednisolone
3. Cephalexin
4. Loratadine

Moh'd Terbi

Answer: 2 - Prednisolone

Explanations:

- This patient is having skeeter syndrome as evidenced by the rapidity of his symptoms after sustaining a mosquito bite.
- Steroids, in this case, prednisolone, are the preferred medication when symptoms are severe as in this case.
- Cellulitis is a possibility after any insect bite that results in the violation of skin integrity. However, the symptoms, in this case, developed too rapidly to be from an infection.
- Antihistamines are not a wrong choice to treat mosquito bites that are obviously causing the patient discomfort, but steroids are preferred when skeeter syndrome is the diagnosis.

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Moh'd Terbi

Research Concepts:

Mosquito Bites




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Question 116: A 14-year old male presents for excessive stumbling. His parents report that since eight years of age, he has been tripping when running, which has progressed to tripping when walking. They admit they thought he was simply clumsy. On physical examination, he is a well-appearing child with a marked decrease in muscular strength, 2/5 in proximal extremities, and difficulty rising from a chair. Given the likely diagnosis, what is the best initial investigation in this patient?

Choices:

1. Muscle biopsy
2. Serum creatine kinase
3. Serum lactate dehydrogenase
4. Magnetic resonance imaging

Moh'd Terbi

Answer: 2 - Serum creatine kinase

Explanations:

- This patient presents with a typical phenotype for a dystrophinopathy, most likely Becker, due to late-onset.
- It is most commonly seen in males because the X chromosome is affected.
- The best initial test is serum creatine kinase (CK).
- Expected levels of CK in patients with Becker muscular dystrophy are five times above the upper limit of normal. Patients with Duchenne muscular dystrophy present with CK ten times above the upper limit.

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Moh'd Terbi

Research Concepts:

Dystrophinopathies




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Question 117: A 1-year-old girl presents with episodic abdominal pain, drawing the legs up to the abdomen and kicking the legs in the air for 1 day, anorexia, and loose stools. She has no fever or upper respiratory symptoms. On physical exam, her abdominal exam is soft and non-tender, but her stools are stool guaiac test positive. Of the following, which radiologic study would be recommended for screening?

Choices:

1. CT with contrast of the abdomen
2. Ultrasound
3. Air enema
4. MRI of the abdomen with and without contrast

Moh'd Terbi

Answer: 2 - Ultrasound

Explanations:

- This patient has suspected intussusception given the episodic abdominal pain and heme-positive stool.
- Though CT, MRI, or plain film could either identify or help identify intussusception, ultrasound is a much easier, less invasive, and less expensive modality. The sensitivity and specificity reach nearly 100% in institutions with well-trained ultrasonographers.
- Air enema can be used to diagnose intussusception. It often successfully treats the condition. There is a risk of perforation with this procedure, and the patient must be cleared for surgery and surgical backup available before performing. Ultrasound is non-invasive and does not require preoperative evaluation.
- Ultrasound can identify both small and large bowel intussusception.

Moh'd Terbi

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Research Concepts:

Child Intussusception




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Question 118: A 2-month-old baby presents for well-child care.

The infant does not engage with the parents and is hypotonic with a weak suck and mild joint contractures. Lab results excluded both infectious and acute metabolic disorders. An echocardiogram is performed to rule out type glycogen storage disease type II (GSD2); however, results are within normal limits. What are the differential diagnoses?

Choices:

1. Duchenne muscular dystrophy
2. Glycogen storage disease type I
3. Spinal muscular atrophy type I
4. Danon disease

Moh'd Terbi

Answer: 3 - Spinal muscular atrophy type I

Explanations:

- Patients with spinal muscle atrophy type I (SMA1) present similarly to glycogen storage disease type II (GSD2). However, the main difference with SMA1 is the absence of cardiac anomalies.
- Typical phenotype expressions of this subtype are mild joint contractures, hypotonia, and variable difficulty with suck and swallow.
- Onset is before age 6 months. The prognosis is poor with a life expectancy of 2 years.
- SMA1 is also known as Werdnig-Hoffman disease.

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Moh'd Terbi

Research Concepts:

Spinal Muscle Atrophy




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Question 119: An 18-month-old female was brought in by emergency medical services due to worsening respiratory distress and a 2-day history of high-grade fever, drooling, decreased activity, and stridor. On physical exam, the patient was ill-appearing, febrile, tachycardia, and lethargic. What is the preferred management?

Choices:

1. Intravenous vancomycin, emergent head and neck computed tomography (CT) scans with contrast
2. Secure the airway, and fine-needle aspiration under the CT guidance for culture
3. Administer intravenous dexamethasone and ICU admission, head and neck CT scans with contrast within the next 3 hours
4. Secure the airway with the fiberoptic bronchoscopy visualization, IV vancomycin, and head and neck CT scan

Moh'd Terbi

Answer: 4 - Secure the airway with the fiberoptic bronchoscopy visualization, IV vancomycin, and head and neck CT scan

Explanations:

- The patient shows signs of airway compromise, so the immediate essential step is to secure the airway. The choice of antimicrobial regimens for the treatment of deep neck space infections has not yet been studied in clinical trials. Intravenous nafcillin or vancomycin plus gentamycin or tobramycin combination, ampicillin/sulbactam, or clindamycin are generally accepted initial choices.
- For methicillin-resistant Staphylococcus aureus (MRSA) infections, vancomycin or linezolid plus cefepime (alternates are metronidazole, imipenem, meropenem, piperacillin-tazobactam) can be used.
- In patients with airway compromise due to deep neck infections, intubation may get increasingly difficult with the passage of time due to worsening airway obstruction, and personnel with expertise in the management of advanced airway should be available.
- The use of glucocorticoids for symptomatic relief in patients with acute airway obstruction remains controversial. It lacks supporting evidence, and any patient with a deep neck abscess and even minimal airway symptoms should be electively intubated and the abscess drained.

Moni-Terry

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Research Concepts:

Deep Neck Infections

StatPearls Knowledge Base

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Moh'd Terbi

Question 120: A 9-year-old girl is brought to the office for her first well-child care visit after immigrating from Mexico 1 month ago. When inquiring about the child's past medical history, her mother states that the girl started walking at 11 months of age and was speaking in full sentences by 4 years of age. She also has a history of allergic rhinoconjunctivitis for which she takes daily diphenhydramine, snores at night and was once told that she would need to have her tonsils removed. She also wets the bed 4-5 nights per week. The mother says that she is not concerned about the bed wetting because both she and her husband had the same issue and they grew out of it. Which of the following is the strongest risk factor for enuresis in this patient?

Choices:

1. Therapy with first-generation antihistamines
2. Tonsillar hypertrophy and sleep-disordered breathing
3. Female sex
4. Hispanic origin

Med'd Terbi

Answer: 2 - Tonsillar hypertrophy and sleep-disordered breathing

Explanations:

- There is an association between sleep-disordered breathing and enuresis.
- It has been postulated that the higher prevalence of enuresis observed in patients with sleep-disordered breathing may be mediated by atrial natriuretic peptide and antidiuretic hormone.
- Enuresis tends to be cured, or its frequency drastically diminished, after tonsillectomy and/or adenoidectomy in these patients.
- Enuresis is more common in boys when compared to girls, with a ratio of 3:1, but this difference tends to decrease after age 10 years. The prevalence of enuresis seems to be similar across cultures and racial backgrounds.

Mohud Terbi

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Research Concepts:

Nocturnal Enuresis




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Question 121: A 16-year-old patient presents to the hospital with a history of headache, fever, and neck stiffness for a few hours. Kernig and Brudzinski's signs are positive on examination. A cerebrospinal fluid analysis reveals an opening pressure of 211 mm H_2O, cytosis of 3000 cells/microliter with 94% polymorphonuclear leukocytes, a glucose level of 36 mg/dL, and protein level of 121 mg/dL. Which of the following antibiotics should be initiated empirically?

Choices:

1. Penicillin and gentamicin
2. Ceftriaxone and ampicillin
3. Vancomycin and ceftriaxone
4. Ampicillin and gentamicin

Moh'd Terbi

Answer: 3 - Vancomycin and ceftriaxone

Explanations:

- Neisseria meningitides and Streptococcus pneumonia are the most common causative organisms of bacterial meningitis in low-risk patients.
- Vancomycin with ceftriaxone is the best initial treatment for bacterial meningitis until antibiotic sensitivity is available. The antibiotics should be administered parenterally. For immunocompromised patients, empiric antibiotic coverage should include ampicillin (against Listeria monocytogenes) added to vancomycin with ceftriaxone.
- Dexamethasone should be given before or concurrently with antibiotics. It should be continued when the etiology of Streptococcus pneumonia is confirmed.
- In cases of healthcare-associated bacterial meningitis, the antibiotic regimen should include vancomycin plus cefepime, ceftazidime, or meropenem.

Wahid Terbi

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Research Concepts:

Streptococcal Meningitis




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Question 122: A mother brings in her healthy 5-year-old male after she found him with a needle in his hand while playing in the neighborhood park. His vaccinations are up to date. There is no noticeable blood on the needle, but he does have a small superficial puncture wound on the index finger. What is the best management for this patient?

Choices:

1. Verifying the patient's tetanus status and counseling
2. Empiric treatment with tenofovir and raltegravir
3. Empiric treatment with hepatitis B immunoglobin
4. Human immunodeficiency virus (HIV) testing now and one month later

Moh'd Terbi

Answer: 1 - Verifying the patient's tetanus status and counseling

Explanations:

- Percutaneous needle stick injuries can occur in public settings and can result in requests for nonoccupational postexposure prophylaxis (nPEP). Unless the patient is injected with blood from the syringe attached to the needle, the risk of contracting HIV from this exposure is negligible. No HIV infections from such injuries have been documented. These injuries typically involve small-bore needles that only have small amounts of blood (if any), and the infectiousness of any virus present is low.
- As with any stick from metal, tetanus verification should be done as well as general counseling regarding the risks for hepatitis and HIV. Patients should also be educated not to handle needles.
- HIV testing at this time will not determine if the child was infected with HIV. HIV testing should occur three months after exposure.
- The patient reportedly has up-to-date vaccinations, and so the child likely had three doses of the hepatitis B vaccination, which is given at birth, two months, and six months of age. If the child has had all three doses of the vaccination, he or she is immune to hepatitis B, and no further testing or treatment for hepatitis B is needed.

Mona Terbi

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Research Concepts:

HIV Prophylaxis



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Moh'd Terbi

Question 123: A 3-year old is seen with a fever for the past four days. The mother claims the child is very irritable and has no appetite; he has been crying and complaining of abdominal pain. Despite giving the child acetaminophen every 4 hours, the fever has persisted. He was born at term, is up to date on his vaccinations, and is otherwise healthy. Exam reveals an irritable ill-looking child. He has bilateral non-exudative conjunctivitis and marked erythema of the hands and feet. His lips have fissured, and his tongue tip appears beefy red. Neck exam reveals unilateral cervical adenopathy. Except for mild normocytic anemia, all the blood work appears normal. What urological complication of the disease is common in these children?

Choices:

1. Phimosis
2. Torsion of testis
3. Varicocele
4. Epididymitis

Moh'd Terbi

Answer: 4 - Epididymitis

Explanations:

- Patients with Kawasaki disease can develop several other complications besides the heart, but not phimosis.
- Patients can develop scrotal pain which may be concerning for testicular torsion and should be ruled out as a diagnosis.
- Some children may complain of scrotal pain, which is often due to epididymitis.
- The condition is treated with antibiotics and resolves without sequelae.

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Moh'd Terbi

Research Concepts:

Kawasaki Disease




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Question 124: A 1-hour old baby develops tachypnea 30 minutes after birth. His oxygen saturation is 93%, which does not improve with oxygenation. A chest X-ray shows a pneumothorax at the left lung apex, the thymus is outlined by air, and each lobe of the thymus is displaced laterally. What is this radiological finding called?

Choices:

1. Spinnaker sign
2. Ring sign
3. Naclerio V sign
4. Subcutaneous emphysema

Moh'd Terbi

Answer: 1 - Spinnaker sign

Explanations:

- The Spinnaker sign is the only finding listed that can be found in a pediatric patient. On CXR, this will appear as an elevation of the thymus. The thymus is outlined by air, and each lobe is displaced laterally.
- Pneumomediastinum is defined as air present in the mediastinum. Pneumomediastinum develops when air extravasates from within the airway, lungs, or esophagus. Extravasated air may then dissect contiguously into the neighboring cervical subcutaneous tissues, epidural space, pericardium, and/or the peritoneal cavity.
- As a clinical entity, pneumomediastinum is rare and typically self-limited. Once diagnosed and serious pathology has been excluded, management largely focuses on symptomatic treatment.
- Subcutaneous emphysema is a common CXR finding in patients with pneumomediastinum. The most common finding is air outlining the mediastinum.

Mon'd Terkh

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Research Concepts:

Pneumomediastinum




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improvement.

Moh'd Terbi

Question 125: A 17-year-old female presents confused and uncooperative. Her vital signs are normal except for a respiratory rate of 32/minute. Blood work reveals a sodium of 137 mEq/L, potassium 2.5 mEq/L, bicarbonate 13 mEq/L, chloride 119 mEq/L, BUN 16 mg/dL, creatinine 0.6 mg/dL, glucose 80 mg/dL, calcium 9.2 mg/dL, urine pH 7.7, urine sodium 38 mEq/L, urine potassium 45 mEq/L, and urine chloride 20 mEq/L. Her arterial blood gas shows a pH of 7.27, PCO2 28 mmHg, and PO2 94 mmHg on room air. What is the most likely diagnosis?

Choices:

1. Respiratory acidosis
2. Distal renal tubular acidosis
3. Lactic acidosis
4. Malabsorption with chronic diarrhea

Moh'd Terbi

Answer: 2 - Distal renal tubular acidosis

Explanations:

- The patient has hyperchloremic, non-anion gap metabolic acidosis with appropriate respiratory compensation. This can be due to gastrointestinal bicarbonate losses such as from diarrhea or renal causes, including proximal renal tubular acidosis (RTA) type II, distal RTA (type I), or hypoaldosteronism RTA (type IV). The urinary anion gap in diarrhea may be negative.
- A positive urinary anion gap (urine sodium plus urine potassium minus urine chloride) points towards a renal etiology. The fact that the patient has an elevated urine pH and hypokalemia in the setting of acidosis points to distal RTA because the normal response would be a lowering of urine pH in the setting of metabolic acidosis.
- Distal RTA presents with rickets, growth failure, and osteomalacia due to metabolic acidosis. Hypercalciuria, hypocitraturia, and alkaline urine lead to nephrocalcinosis, calcium phosphate stones, and recurrent urinary tract infections. End-stage renal failure due to nephrocalcinosis may result.
- Incomplete distal RTA should be considered in any patient with calcium phosphate stones and a persistently elevated urine pH in the absence of infection.

Mona Tehri

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Research Concepts:

Renal Tubular Acidosis



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Moh'd Terbi

Question 126: A 17-year-old female presents to the emergency department with chest pain and a racing heart for 30 minutes after an attempted suicide. She has a history of asthma and emptied the entire inhaler in less than an hour. On physical exam, her eyes are dilated, and she is found to have dry mucous membranes. Blood pressure is 150/86 mmHg, pulse is 120 bpm and temperature of 101 F. Blood is drawn immediately and sent for a complete metabolic panel and arterial blood gas. An EKG shows sinus tachycardia and U waves. CK-MB and troponin levels were within the range in the first blood draw. Her lab report shows a pH of 7.20, pO2 of 80 mmHg, pCO2 of 33 mmHg, bicarbonate of 12 mEq/L, potassium of 2.8 mEq/L, phosphate of 1.2 mEq/L, chloride of 100 mEq/L and sodium of 132 mEq/L. Which of the following medications is likely responsible for her symptoms?

Choices:

Moh'd Terbi

1. Fluticasone
2. Prednisone
3. Ipratropium
4. Salmeterol

Answer: 4 - Salmeterol

Explanations:

- Long-acting beta-agonists are frequently used to treat asthma.
- When taken in excess they cause a sympathomimetic syndrome, metabolic acidosis, and hyperlactatemia. The patient has a high anion gap metabolic acidosis. Her blood pH is 7.20 with bicarbonate less than 24 mEq/L. Anion gap= Na – (Cl + HCO3) = 132 – (100+12) = 132 – 112 = 20 mEq/L.
- A sympathomimetic syndrome is symptoms of pupil dilation, dry mouth, tachycardia, and other signs of heightened sympathetic stimulation.
- Supportive therapy is used to treat this overdose.

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Moh'd Terbi

Research Concepts:

Salmeterol




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Question 127: A 15-month-old female is evaluated due to fever, decreased appetite, and vomiting. Physical examination is remarkable for an ill-appearing female, crying yet consolable, in no respiratory distress. Genitourinary exam shows a pink fibrotic tissue over the vulva. A urinalysis is remarkable for WBC 20-30/HPF, positive leukocyte esterase, positive nitrites, and moderate bacteria. This is the second urinary tract infection this year for this patient. She is discharged home on antibiotics and to follow up with her primary provider. Regarding the labial adhesion, what should be the next step in management?

Choices:

1. Reassurance
2. Topical estrogen cream
3. Surgical separation
4. Prophylactic antibiotics

Moh'd Terbi

Answer: 2 - Topical estrogen cream

Explanations:

- Reassurance is the first-line treatment when a patient with labial adhesions is asymptomatic. However, this patient has a history of multiple urinary tract infections.
- Some studies have shown that a prepubertal female who has labial adhesion has a higher risk of having a urinary tract infection (UTI). First line management for labial adhesion is topical estrogen cream.
- A few weeks of topical management is recommended before surgical management is considered. Surgical lysis of the fusion is recommended if topical management is unsuccessful.
- There is no need for prophylactic antibiotics in patients with labial adhesions and UTIs. Management is to resolve the labial adhesion. When the labial adhesions resolve successfully, the risk for UTIs decreases.

Mohd Terbi

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Research Concepts:

Labial Adhesions




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Question 128: An 18-year-old female presents with a complaint of vague perianal itching, which mostly occurs at night. She also complains of feeling nauseated for the last few days. The patient admits that she is sexually active and is worried that she may have a sexually transmitted infection. On physical examination, the patient has excoriations in her perianal area. A tape test is done and confirms the diagnosis. What is the best next step in the management of this patient?

Choices:

1. Treat with mebendazole
2. Send stool for a comprehensive culture
3. Treat with ivermectin
4. Perform a human chorionic gonadotropin (hCG) urine test

Moh'd Terbi

Answer: 4 - Perform a human chorionic gonadotropin (hCG) urine test

Explanations:

- The patient's most likely diagnosis is Enterobius vermicularis. In females, a human chorionic gonadotropin (hCG) urine test should be done to rule out pregnancy before starting therapy.
- Pyrantel pamoate is preferred over mebendazole and albendazole in the treatment of pregnant patients with pinworm infestations.
- Treatment of Enterobius vermicularis infection in pregnancy should be reserved for patients who have significant symptoms.
- Stool examination is not helpful in the diagnosis of E. vermicularis infection, as the pinworms are only occasionally excreted in the stool.

Mohd Terbi

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Research Concepts:

Enterobius Vermicularis




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Question 129: A 7-year-old female is brought in for a second opinion for bedwetting. The patient's father states that she has no daytime symptoms but wets the bed every night. She was evaluated by her previous clinician who recommended desmopressin therapy, which the patient took for five months, achieving dryness on most nights. The father states that desmopressin therapy was discontinued two months ago, and she is back to wetting the bed every other night since then. Which treatment modality is least likely to have a recurrence of symptoms after discontinuation of therapy?

Choices:

1. Imipramine
2. Desmopressin
3. Alarm system
4. Oxybutynin

Moh'd Terbi

Answer: 3 - Alarm system

Explanations:

- By a slight difference over desmopressin, the most effective therapeutic modality is the alarm system.
- Cure rates for alarm systems are estimated at 66% – 70%, even though it takes longer than pharmacotherapy, requires a high degree of patient and family compliance as well as needs strict daily usage to achieve optimal results.
- The alarm system offers a much lower relapse rate after discontinuation than pharmacological options.
- Therapy is considered successful if the patient uses the device without triggering the alarm for one month, which usually requires 3-4 months of daily use.

Mohd Terbi

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Research Concepts:

Nocturnal Enuresis




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Question 130: An 18-month-old male was eating pecans, began choking, and became cyanotic. The symptoms subsided at the emergency department. He appeared comfortable, but his mother stated he was "just not himself" since the choking episode. Chest auscultation demonstrated equal breath sounds without wheezing. The chest radiograph demonstrated normal results. Which of the following is the next step in treatment?

Choices:

1. Repeat the chest radiograph in 12 hours
2. Discharge the patient home and tell the mother to return if his condition worsens
3. Schedule a rigid bronchoscopy performed with the patient under general anesthesia after an appropriate time has been allotted for ingesting nothing by mouth (NPO)
4. Admit the patient to the hospital for observation

Moh'd Terbi

Answer: 3 - Schedule a rigid bronchoscopy performed with the patient under general anesthesia after an appropriate time has been allotted for ingesting nothing by mouth (NPO)

Explanations:

- Although examination findings were normal, the history strongly indicates foreign body aspiration. A repeat chest radiograph may still display normal findings. Once complications occur, then the chest radiograph may depict findings such as pneumonia. However, the goal of care is to prevent complications of foreign body aspiration, which increase in incidence with time.
- One study has shown that a lodged foreign body lower in the respiratory tract carries comparatively higher odds of mortality compared to a foreign body lodged more proximally. This may be secondary to significant mucous plugging and later dislodgement resulting in contralateral obstruction and subsequent hypoxia. This would be a major concern for the patient in the vignette if they are sent home.
- Rigid bronchoscopy is the study most able to definitively diagnose and treat a foreign body aspiration. Flexible bronchoscopy is occasionally performed initially in cases of diagnostic uncertainty but ultimately does not have the same capability for foreign body removal as compared to rigid bronchoscopy.
- One study has shown that if there is a combination of three highly suggestive diagnostic criteria, then the risk of foreign body aspiration is 91%. Diagnostic criteria include a history of sudden choking, cyanosis, apnea, and decreased breath sounds. Radiological criteria include atelectasis, mediastinal shift, or signs of air trapping. In this particular study, zero patients who underwent flexible bronchoscopy but did not have any of the aforementioned criteria had an underlying foreign body aspirated. Thus, only in cases where none of these criteria are met would it be reasonable to observe the patient.

Moni Terlu

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Research Concepts:

Foreign Body Aspiration

StatPearls Knowledge Base

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Moh'd Terbi

Question 131: A mother brings in her 5-month-old infant with constipation. She reports the infant has been passing hard, "pellet-like" stools for the past three weeks. He began eating some solid foods, including rice cereal, approximately one month ago. On physical examination, he is at the 50th percentile for weight and length. The remainder of the physical examination is normal. What is the most appropriate next step?

Choices:

1. Provide the mother with the name of an osmotic laxative she can purchase over-the-counter
2. Advise the mother to give her infant additional water
3. Advise the mother to give her infant prune juice
4. Advise the mother to switch from rice cereal to multigrain cereal

Moh'd Terbi

Answer: 4 - Advise the mother to switch from rice cereal to multigrain cereal

Explanations:

- The introduction of solid foods, typically initiated between four and six months, is a common trigger for constipation in infants. In addition, the transitional diet may contain inadequate amounts of fiber.
- Most infant rice cereals do not contain fiber, and most wheat, barley, and multigrain infant cereals contain 1-3 grams of fiber per serving. Therefore, switching from rice cereal to one of these alternatives may help to alleviate constipation.
- Free water should not be given to infants under six months of age because of the risk of developing clinically significant hyponatremia.
- Fruit juice should generally not be given to infants younger than 12 months of age. Juice does not provide nutritional benefits for infants and may lead to undernutrition, excess weight gain, and dental caries.

Mohsen Terbi

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Research Concepts:

Constipation




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Question 132: A 5-year-old boy with no significant past medical history presents to the emergency department with severe abdominal pain and bloody diarrhea for the last 24 hours. On initial evaluation, he is afebrile and slightly tachycardic, with a blood pressure of 100/60 mmHg. He is somewhat fatigued and has dry mucus membranes but is otherwise well appearing. There is no evidence of petechiae or purpura. His abdomen is soft, flat, and slightly tender. There is no rebound or guarding. There are no palpable masses or organomegaly. His platelet count and hematocrit are normal, and there is no evidence of hemolysis on a peripheral blood smear. Creatinine level is within normal limits. An intravenous fluid bolus is started. Stool microbiologic testing is ordered; however, the patient cannot provide a sample at this time. What is the best next step in the management of this patient?

Choices:

Mohsen Tehrani

1. Await stool sample and continue intravenous fluids
2. Obtain a rectal swab and continue intravenous fluids
3. Outpatient stool testing and discharge to home on oral hydration
4. Outpatient stool testing and discharge to home on empiric antibiotics

Answer: 2 - Obtain a rectal swab and continue intravenous fluids

Explanations:

- This patient likely has Shiga toxin-producing Escherichia coli infection, given the severity and acute onset of bloody diarrhea and afebrile presentation. Rapid and accurate microbiologic testing is essential for the appropriate management of these patients to prevent complications such as hemolytic uremic syndrome (HUS).
- Unless the patient can immediately produce a stool sample, a rectal swab should be obtained as a priority and sent for Shiga toxin testing to expedite the diagnosis.
- The rectal swab should be sent for culture as well because Shiga toxin enzyme immunoassay (EIA) can fail to detect approximately 10-15% of the infections which are later identified by culture.
- Aggressive intravenous hydration with isotonic fluids is essential early in the course of the disease to prevent serious complications such as HUS. Discharging the patient home on oral hydration therapy without confirming the presence or absence of Shiga-toxin producing E. coli is inappropriate.

Moh'd Terbi

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Research Concepts:

Enterohemorrhagic Escherichia Coli



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Moh'd Terbi

Question 133: A five-year-old male presents to his provider. His mother is concerned because he has been "walking funny." After a complete history of present illness and review of past medical history, the child is found to have no other medical conditions. The mother denies fever or loss of appetite. On examination, the child has point tenderness over the medial aspect of his right foot. There is minimal swelling. What is the next step for the provider to take?

Choices:

1. No further workup required, have the child follow up in 3 weeks
2. Labs including CBC, CRP, and blood cultures
3. Plain film of the right foot with labs if needed
4. Ultrasound-guided biopsy

Moh'd Terbi

Answer: 3 - Plain film of the right foot with labs if needed

Explanations:

- Plain radiographic images are the imaging modality of choice in the diagnosis of Kohler disease.
- A provider may also get labs if there is concern about infection.
- On plain radiographs, the navicular bone will be wafer-thin and collapsed.
- Advanced imaging such as CT and MRI are not required for the diagnosis of Kohler disease.

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Research Concepts:

Moh'd Terbi

Kohler Disease




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Question 134: A 10-year-old girl presents for her yearly well-child visit. She is a competitive gymnast and has no complaints. Her height and weight are in the 30th and 20th percentiles, respectively, with a normal growth trajectory. Physical examination reveals a new cardiac murmur. The murmur is a grade 2/6, medium-pitched, blowing, systolic ejection murmur best heard over the left upper sternal border with some radiation to the back. The murmur is most audible when auscultated with the bell of the stethoscope. The S1 and S2 heart sounds are normal, and there are no ejection clicks. The child is otherwise healthy with no acute complaints. What is the most likely diagnosis?

Choices:

1. Innocent pulmonary flow murmur
2. Pulmonic valve stenosis
3. Aortic valve stenosis
4. Still murmur

Moh'd Terbi

Answer: 1 - Innocent pulmonary flow murmur

Explanations:

- This child likely has a pulmonary flow murmur. The pulmonary flow murmur is one of the "innocent" murmurs heard during childhood, with a peak incidence between the ages of eight and fourteen years. It is best appreciated in children with thin chest walls.
- The pulmonary flow murmur is an early-to-mid-systolic murmur that is best heard at the left upper sternal border using the diaphragm of the stethoscope. The murmur is medium-pitched with a blowing quality; it increases in intensity with inspiration and in the supine position due to an increase in venous return.
- A Still murmur is a common innocent murmur that is best heard over the left lower sternal border using the bell of the stethoscope. It is a low-pitched murmur with a vibratory quality. Like the pulmonary flow murmur, the Still murmur sounds loudest when the patient is supine.
- The murmur of aortic valve stenosis (AS) is a harsh mid-systolic ejection murmur best heard over the right upper or left middle sternal border. The murmur of AS often radiates to the carotid arteries and is accompanied by an early systolic click and a thrill in the suprasternal notch. Pulmonary stenosis (PS) presents with a systolic ejection click and a harsh mid-systolic ejection murmur best heard at the left upper sternal border.

Vidhi's Tech

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Research Concepts:

Innocent Murmur

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Moh'd Terbi

Question 135: A newborn male infant is found to have raisin-like, wrinkled abdominal wall musculature, cryptorchidism, and hydroureteronephrosis. Oligohydramnios was noted prenatally. Which study should be ordered first to help rule out the most likely cause of early perinatal mortality in this patient?

Choices:

1. Chest x-ray
2. Basic metabolic panel
3. Magnetic resonance imaging (MRI) of the abdomen
4. Complete blood count

Moh'd Terbi

Answer: 1 - Chest x-ray

Explanations:

- Prune belly syndrome is a rare, congenital disorder largely characterized by the clinical triad of deficient abdominal musculature, cryptorchidism, and urinary tract abnormalities.
- Children born with the condition present on a spectrum ranging from incompatible with life to aging normally and having kids of their own.
- While nearly every male child born with prune belly syndrome displays bilateral cryptorchidism where the testes lie intra-abdominally, bordering the dilated ureters at the level of the iliac arteries, the diverse outcomes one can expect from the syndrome owe to the variable severity in the musculature of the abdominal wall. However, the life-limiting factor is usually the severity of the urinary tract dysmorphism.
- Perinatal mortality ranges between 10 to 25% in contemporary studies and is directly connected to the level of prematurity and severity of pulmonary hypoplasia as a direct result of urinary tract abnormality leading to Potter sequence. A chest radiograph should be obtained to rule out early pulmonary problems, especially in those cases of known oligohydramnios. Once the patient is stable, renal bladder ultrasound will give early information as to the nature and severity of the urinary tract dysmorphism.

Mehta Tarun

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Research Concepts:

Prune Belly Syndrome

StatPearls Knowledge Base

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Moh'd Terbi

Question 136: A patient being treated for malaria arrives in the emergency department with a chief complaint of ringing in the ears, blurred vision, nausea, vomiting, and confusion. The patient has a fever, is hypotensive, and is hypoglycemic with a fingerstick glucose of 50 mg/dl. Which of the following would not be expected?

Choices:

1. Massive hemolysis
2. Hemoglobinuria
3. Renal failure
4. Sweet taste in the mouth

Moh'd Terbi

Answer: 4 - Sweet taste in the mouth

Explanations:

- Drugs like quinidine are associated with cinchonism, which is characterized by tinnitus, blurred vision, gastrointestinal upset, and delirium.
- Cinchonism or quinism is caused by an overdose of quinine, quinidine, or cinchona bark. Quinine is used to treat malaria. In small amounts, quinine is an ingredient in tonic water, acting as a bittering agent. Cinchonism can occur from therapeutic doses of quinine, either from one or several large doses. Quinidine can cause symptoms of cinchonism with as little as a single dose.
- Symptoms of mild cinchonism include flushed and sweaty skin, ringing in the ears, blurred vision, impaired hearing, confusion, reversible high-frequency hearing loss, headache, abdominal pain, rashes, lichenoid photosensitivity, vertigo, dizziness, dysphoria, nausea, vomiting, and diarrhea. Large doses may result in severe reversible cinchonism symptoms, including skin rashes, deafness, somnolence, diminished visual acuity or blindness, anaphylactic shock, disturbances in abnormal heart rhythm or conduction, and potentially death from cardiotoxicity. Quinine may trigger a rare form of hypersensitivity reaction in patients with malaria termed blackwater fever, characterized by massive hemolysis, hemoglobinemia, hemoglobinuria, and kidney failure. Patients treated with quinine may develop hypoglycemia and hypotension. Most symptoms of cinchonism are reversible and disappear once quinine is withdrawn.
- Quinine inactivates enzymes in cell lysosomes and has an anti-inflammatory effect. As a result, it is sometimes used to treat rheumatoid arthritis. Switching off these enzymes can cause abnormal accumulation of glycogen and phospholipids in lysosomes, resulting in a toxic myopathy. This may be the cause of cinchonism.

Monica Terbi

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Research Concepts:

Cinchonism

StatPearls Knowledge Base

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Moh'd Terbi

Question 137: What personality disorder is most likely to be present in a patient with ulcerative colitis?

Choices:

1. Histrionic
2. Obsessive-compulsive
3. Narcissistic
4. Antisocial

Moh'd Terbi

Answer: 2 - Obsessive-compulsive

Explanations:

- Some studies have found that obsessive-compulsive personality disorder is observed in a high proportion of patients ulcerative colitis (UC).
- Patients present with diarrhea mixed with blood and mucus that persists for weeks, weight loss, and anemia. They may have abdominal pain and discomfort with bowel movements.
- UC may cause inflammation in many body systems, such as the development of painful arthritic knees. UC is typically continuous from the rectum to the colon.
- UC may involve distal colitis, which is treatable with enemas. It also may involve other regions of the colon: (1) proctitis, limited to the rectum; (2) proctosigmoiditis, involving the rectosigmoid colon; (3) left-sided colitis, involving the descending colon; (4) extensive colitis, with inflammation extending beyond the reach of enemas; and (5) pancolitis, involving the entire colon.

Monica Terbi

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Research Concepts:

Ulcerative Colitis




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Question 138: A 5-year-old male is brought to the clinic for an ear infection. The parents mention that they also are concerned that he is no longer talking and developing like he was the first few years of life. It is as if he "went backward." The boy's mother says he no longer wants to play with her or his older brother. He was interested in potty training like his older brother but now has completely lost all bowel control and is back to wearing diapers daily. They had planned on enrolling him in school but are not sure if that is possible. Which of the following is the most likely diagnosis?

Choices:

1. Depression
2. Childhood disintegrative disorder
3. Tourette syndrome
4. Intellectual disability

Moh'd Terbi

Answer: 2 - Childhood disintegrative disorder

Explanations:

- This child has autism spectrum disorder; a type sometimes called regressive autism or childhood disintegrative disorder.
- There is normal development through at least the first 2 years of life.
- Regression can vary and can occur between 2 and 10 years of age.
- It is a rare condition, with only 1.7 cases per 100,000. It must affect two of the following six areas: expressive language skills, receptive language skills, social skills and self-care skills, control over bowel and bladder, play skills, and motor skills.

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Moh'd Terbi

Research Concepts:

Autism Spectrum Disorder




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Question 139: A 10-year-old female presents to the emergency department (ED) with facial and oral swelling that started about three hours ago. She denies eating or drinking anything unusual, skin rash or itching, and past episodes of similar symptoms. Her only other past medical history is occasional recurrent abdominal pain. At eight years of age, she had an appendectomy due to abdominal pain; however, the pathology was determined to be normal. Her father mentions that he had episodes of swelling of his hands and feet when he was a teenager, which self-resolved within two to three days. The patient's vital signs are normal. The physical exam is remarkable for nonpitting, nontender swelling of her cheeks and lips and minor intraoral swelling of her tongue, sparing her uvula. She is observed in the ED for six hours, and her symptoms improve. She and her father are instructed to follow up with her primary care provider. Given the likely diagnosis, what is the most reliable and cost-effective screening test for this patient's condition?

Moh'd Terbi

Choices:

1. Bradykinin level
2. C3 level
3. C4 level
4. CH50 level

Answer: 3 - C4 level

Explanations:

- This patient presents with hereditary angioedema (HAE). The most reliable and cost-effective screening test for HAE is a C4 level.
- It is almost always decreased during attacks and is low in between them. If a C4 level is normal, but suspicion of angioedema is high, the test should be repeated.
- The cause of the swelling in all cases of HAE is secondary to the overproduction of bradykinin. Angiotensin-converting enzyme inhibitors (ACE-I) also cause angioedema, but in this case, secondary to the lack of catabolism of bradykinin. Bradykinin is not a reliable screening test for the diagnosis of HAE. C3 and C1q levels are normal in patients with hereditary angioedema regardless of clinical status. Some diseases associated with low C3 levels include SLE and membranoproliferative glomerulonephritis.
- CH50 (total serum hemolytic complement) is typically decreased during attacks with the return to normal with recovery. It is nonspecific because a decrease in any of the components of the complement system can cause low CH50 levels. Hereditary angioedema is caused by C1 inhibitor (C1 INH) deficiency. While some patients may have low levels, others may have normal C1 INH, but due to mutation in the protein, it may be dysfunctional.

Michael Terlizzi

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Research Concepts:

Hereditary Angioedema

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Moh'd Terbi

Question 140: A 17-year-old girl has had a cough associated with exercise for four months. She started an exercise program 4 months ago as part of a weight loss program. Exercise includes walking on a treadmill at the fitness center. She has seasonal allergies with current rhinorrhea and sometimes has a cough at night, for which she takes diphenhydramine. Past medical history includes allergic rhinitis and gastroesophageal reflux disorder. Medications include as-needed famotidine and diphenhydramine. She occasionally has white sputum. Her vitals are normal, and her body mass index (BMI) is 35.6. Exam shows mildly erythematous nasal turbinates and pharynx. Lungs are clear. What is the next best step to elucidate the cause of her cough?

Choices:

1. Chest radiograph
2. Spirometry before and after bronchodilator use
3. Serum IgE
4. Trial of antihistamine

Moh'd Terbi

Answer: 2 - Spirometry before and after bronchodilator use

Explanations:

- This patient with a history of allergies and new onset of cough after starting an exercise program likely has asthma and/or a nasal cause of her cough, including allergic rhinitis, exercise-induced rhinosinusitis, or upper airway cough syndrome versus exercise-induced bronchoconstriction (EIB). Cough that occurs at night is more indicative of asthma, allergic rhinitis, or gastroesophageal reflux disorder. The environment in which she is exercising and the type of exercise, walking, which is less likely to induce the large increase in ventilation that is the root cause of EIB in susceptible individuals, puts her at low risk for EIB. CHEST guidelines recommend the evaluation of cough in adolescent athletes, including asthma, EIB, respiratory tract infection, upper airway cough syndrome, and environmental exposures.
- Spirometry before and after the use of bronchodilators can help to confirm the diagnosis of asthma. Up to 90% of people with asthma experience Exercise-induced bronchoconstriction (EIB). Exercise testing with spirometry, specifically changes in FEV_1, can be undertaken in the future for a diagnosis of EIB.
- The patient likely also has an allergic component to her presentation. Upper respiratory tract infections are also more common in people with EIB due to inflammatory changes to the lung tissue, including increased mucus production.
- To appropriately diagnose and treat this patient, the entire airway from nose to lung must be considered.

Mon'd Terbi

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Research Concepts:

Exercise Induced Asthma

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Moh'd Terbi

Question 141: A 17-year-old previously healthy female in Hawaii developed fever, chills, pharyngitis, muscle pain, scleral injection, headache, cervical lymphadenopathy, and photophobia lasting 7 days and was improving. The patient then seemed to relapse with additional symptoms of nausea, headache, emesis, and moderate neck stiffness. She raises pigs. Lumbar puncture showed 180 WBCs per microliter that were all monocytes and elevated protein. Which of the following is true?

Choices:

1. More than half of cases are severe
2. Involvement of the central nervous system is common
3. Hepatic and renal involvement is common
4. The most common vector is the mosquito

Moh'd Terbi

Answer: 2 - Involvement of the central nervous system is common

Explanations:

- The patient has leptospirosis, a disease acquired from rats, livestock, cats, dogs, or other pets.
- Most patients have anicteric courses, but 50% to 90% have meningeal involvement.
- Fewer than 10% of cases are icteric, and these patients may also have renal involvement.
- Both anicteric and icteric illnesses start with the septicemic phase, as described in the question.

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Moh'd Terbi

Research Concepts:

Leptospirosis




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Question 142: A 7-year-old male is brought to your clinic by his mom who says for the past year he has seemed different than usual. She says he initially was a very bright child; however, recently he seems to be falling behind in school. His vital signs and physical exam are normal. The growth charts reveal the patient has started to decline, going from the 50th percentile in height to the 25th percentile. The travel history includes a visit to Kenya about a year ago. You treat the patient for possible whipworm infection. What can be expected for the course of this patient?

Choices:

1. The patient will have a complete and immediate resolution of symptoms
2. The patient will have increased nutritional and educational requirements that will need to be met in order to put him on pace with his peers
3. The patient will worsen due to the killing of one type of worm and flourishing of another
4. The patient will experience intermittent bouts of abdominal pain and vomiting due to cyclical worm growth patterns

Moh'a Terki

Answer: 2 - The patient will have increased nutritional and educational requirements that will need to be met in order to put him on pace with his peers

Explanations:

- Trichuriasis is 1 of 3 well-documented soil-transmitted helminthiasis infections; the other 2 are ascariasis and hookworm infection. It is considered a neglected tropical disease by the World Health Organization (WHO) and the Centers for Disease Control and Prevention (CDC).
- Worm infestations, including trichuriasis, can lead to nutritional deficiencies due to parasitic needs. As worm burden increases, so do symptoms, especially those seen in children such as anemia and cognitive dysfunction.
- The whipworm tends to be more resistant to treatment than other helminths, with some studies listing cure rates as low as 28% to 36%. Whipworms can still be present after treatment, however, it is thought that a low worm count leads to no significant disease burden.
- Other complications of trichuriasis include colitis and malabsorption with deficiencies of fat-soluble vitamins. Children may have poor growth and rectal prolapse. Trichuris dysentery syndrome can be found in children (with no adult cases noted) and is seen when there is a very high worm burden.

Mehdi Terbi

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Research Concepts:

Trichuris Trichiura

StatPearls Knowledge Base

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Moh'd Terbi

Question 143: A 5-year-old male presents to the healthcare provider with a history of upper respiratory tract infection and bilateral rash on his buttocks and thighs. The rash consists of palpable purpura ranging from 2 mm to 10 mm in diameter and appeared approximately one week after the upper respiratory tract infection. He also complains of arthralgias and abdominal pain. Which of the following ancillary tests is most appropriate to order for this patient?

Choices:

1. Hepatitis C
2. HIV
3. ANA
4. Urinalysis

Moh'd Terbi

Answer: 4 - Urinalysis

Explanations:

- Henoch-Schönlein purpura (HSP) is a form of leukocytoclastic vasculitis and is the most common vasculitis in children. This disease involves vascular IgA deposition. The clinical features include palpable purpura, abdominal pain, hematuria/renal disease, and arthritis.
- Henoch-Schönlein purpura is a specific form of cutaneous small-vessel vasculitis that typically affects children and follows an upper respiratory tract infection. Approximately 90% of cases are diagnosed in children less than ten years of age. Males are more commonly affected than females.
- With Henoch-Schönlein purpura, the cutaneous lesions typically appear 1 to 2 weeks after an upper respiratory infection, specifically a streptococcal infection. The clinical manifestations include palpable purpura on buttocks and lower extremities with arthralgias, abdominal pain, and renal disease in a subset of patients.
- Henoch-Schönlein purpura involves vascular IgA deposition. The clinical features include palpable purpura, abdominal pain, hematuria/renal disease, and arthritis. Laboratory testing should consist of a punch biopsy with direct immunofluorescence (IgA around blood vessel walls), urinalysis for hematuria and proteinuria, and a guaiac if gastrointestinal symptoms are present.

Mahsa Terbi

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Research Concepts:

Leukocytoclastic Vasculitis

StatPearls Knowledge Base

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Moh'd Terbi

Question 144: A 5-year-old female with a past medical history of atopic dermatitis, asthma, and osteosarcoma that is admitted to the hospital is being evaluated for a fever of unknown origin. The patient is currently undergoing chemotherapy for her osteosarcoma but otherwise has no other complaints. She reports taking an albuterol inhaler as needed for asthma attacks and uses a ceramide lotion for her atopic dermatitis per mother at the bedside. On physical exam, her vitals are within normal limits except a temperature of 102.1 F. Physical exam is otherwise unremarkable. Lab work is ordered. Two days later, the patient develops an asymptomatic, pink papular rash located on her trunk and extremities. However, the fever has resolved. Upon further investigation, it is discovered that the patient had a similar rash three years ago. What is the most likely explanation for the child's rash?

Choices:

Moh'a Terbi

1. Contact dermatitis from the ceramide lotion
2. Allergic reaction from the chemotherapy for her osteosarcoma
3. Reactivation of a latent virus in her central nervous system (CNS)
4. Exacerbation of atopic dermatitis

Answer: 3 - Reactivation of a latent virus in her central nervous system (CNS)

Explanations:

- The rash of roseola infantum is typically asymptomatic and rarely requires the application of topical agents.
- Roseola infantum presents as multiple, pink papules beginning on the trunk and then spreading to the neck and extremities.
- The virus causing roseola infantum lies dormant in the CNS after the initial infection. During episodes of immunosuppression, it is capable of reactivating and causing a similar, more severe fever and rash.
- It is important to obtain a thorough history from the patient and family of any previous skin diseases including rashes as a child.

Mahdi Terbi

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Research Concepts:

Roseola Infantum




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Question 145: A four-year-old African-American male presents to the clinic for hair loss. The patient's mother reports noticing red papules on his scalp that has progressed into a circular patch of hair loss. A teacher recently informed her that other kids at preschool have similar complaints. The provider retrieved a tissue sample and prepared it for light microscopy. Upon inspection of the hair follicles, which of the following findings would suggest the most likely diagnosis?

Choices:

1. Obstruction of the sebaceous gland
2. Bacterial invasion and inflammation
3. Hyphae and spores
4. Miniaturization of the hair follicle

Moh'd Terbi

Answer: 3 - Hyphae and spores

Explanations:

- Tinea capitis is a fungal infection involving the scalp.
- There are two patterns of tinea capitis infection, ectothrix, and endothrix.
- Endothrix infections invade the hair shaft. Hyphae and spores destroy the cuticle.
- Ectothrix infections remain confined to the surface of the hair forming a sheath around the hair shaft.

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Research Concepts:

Moh'd Terbi

Tinea Capitis




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Question 146: A 4-year-old boy presents with monocular vision loss. Symptoms started less than 24 hours ago and have been progressive. There has been mild pain, and the eye is fairly injected on exam. No hyphemia or hypopyon is noted. On further questioning, the family has several dogs at home, and the younger sister recently took medicines for an abdominal infection. An infectious process is suspected. What is the likely organism?

Choices:

1. A nematode
2. A bacteria
3. A virus
4. A fungus

Moh'd Terbi

Answer: 1 - A nematode

Explanations:

- Toxocara canis commonly causes two clinical syndromes in humans: ocular larva migrans (OLM) or visceral larva migrans (VLM). Both syndromes occur when the nematode migrates through host tissues.
- OLM treatment focuses on antihelminthic agents and the control of inflammation. It may occasionally be treated surgically.
- The diagnosis is suspected from the compatible clinical presentation in a patient with marked leukocytosis, eosinophilia, and hypergammaglobulinemia.
- It can then be confirmed by a sensitive and specific enzyme-linked immunosorbent assay.

Mohd Terbi

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Research Concepts:

Toxocara Canis




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Question 147: An overweight 13-year-old child presents for evaluation of left knee pain for the past three months. He states he tries to stay active by playing basketball but the pain has progressed to where he is limping and walking is becoming difficult. He has been evaluated multiple times and has had multiple imaging studies of the knee, including several plain radiographs and an MRI, all of which have been normal. What is the next best study to obtain in evaluating this child's pain?

Choices:

1. Comparison radiographs of the knees
2. A CBC, ESR, C-reactive protein, and blood culture to evaluate for infection/leukemia.
3. Hip radiographs, including an AP and frog-leg views
4. Doppler ultrasound of the lower extremity

Moh'd Terbi

Answer: 3 - Hip radiographs, including an AP and frog-leg views

Explanations:

- Comparison views in this child are unnecessary as there has been extensive imaging of the involved knee. Further comparison views would not be helpful.
- Laboratory investigation may be warranted if the patient has normal radiographs as a chronic infection. A leukemic process can present in this manner. If fever or other signs of infection are evident, then this is an appropriate action.
- This child has a classic presentation of slipped capital femoral epiphysis (SCFE). It is common that pain will radiate to the knee rather than the hip. Imaging of hip is indicated in these patients, but do not obtain a unilateral view of the affected side, as SCFE is often missed this way. A complete AP pelvis and frog-leg view is needed to detect SCFE.
- If there are indications of a deep venous thrombosis, such as erythema, edema, and pain, Doppler sonography is appropriate. This entity should be considered in children with hypercoagulable states, such as protein S or protein C deficiencies, children with recent surgical procedures of the extremity, immobile children either from a surgical procedure or from a chronic condition, such as cerebral palsy, or adolescent females taking some oral contraceptives.

Mohsen Tehrani

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Research Concepts:

Antalgic Gait In Children

StatPearls Knowledge Base

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Moh'd Terbi

Question 148: A 12-year-old female presents to the clinic with a large firm abdominal mass. Imagining suggests a solid connective tissue tumor that originates from the fascia of the abdominal wall, extending into both the abdominal cavity and overlying muscles. Which of the following screenings should the patient receive before surgery to rule out associated diseases?

Choices:

1. Chest x-ray
2. Esophagogastroduodenoscopy
3. EKG
4. Colonoscopy

Moh'd Terbi

Answer: 4 - Colonoscopy

Explanations:

- This patient has presented with a desmoid tumor. Desmoid tumors are rare in the general population but occur in 10-15% of patients with familial adenomatous polyposis (FAP).
- This patient is at an increased risk of FAP and should undergo a colonoscopy to evaluate for adenomatous polyps.
- An EGD should be performed annually beginning at 20-25 years of age.
- An EKG is not necessary for pre-operative evaluation in an otherwise healthy child.

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Moh'd Terbi

Research Concepts:

Familial Adenomatous Polyposis




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Question 149: An 18-year-old female patient is admitted to the hospital with refractory nausea and vomiting. About three days ago she had an upper respiratory tract infection and has been progressively worse since. History is significant for amenorrhea, repeated candida infections of the oral cavity, and debilitating cramps of her hands. Heart rate is 110/min, respiratory rate 18/min, temperature 99.6 F, and blood pressure 90/58 mmHg. On physical exam, she is noted to have hyperpigmentation of the knuckles, the absence of axillary hair, and white patches in the oral cavity. What is the next best step in the management of this patient?

Choices:

1. Obtain plasma ACTH and cortisol at 8 AM
2. Obtain MRI of the pituitary gland
3. Obtain CT scan of the adrenal glands
4. Start stress doses of hydrocortisone

Mon'd Terbi

Answer: 4 - Start stress doses of hydrocortisone

Explanations:

- Plasma and cortisol can be drawn at the time patient is being evaluated in the emergency department or the hospital prior given the first shot of high dose corticosteroids, but given patient is acutely ill, waiting until 8 am to give steroids is not appropriate. Very high levels of ACTH may be seen in patients.
- Based on the clinical presentation the patient most likely has primary adrenal insufficiency, there is no need to obtain an MRI of the pituitary at this time.
- Imaging of the adrenals at this time is not needed given she can be diagnosed clinically and biochemically first. Furthermore, this would delay treatment and will not likely establish the diagnosis.
- Adrenal insufficiency can present with fatigue, abdominal pain, nausea, vomiting, and dizziness. Adrenal crisis is treated by starting stress dose hydrocortisone which results in marked improvement of the patient's status. A history of chronic candidiasis and hypocalcemia as evidenced by cramps in her hands indicate a diagnosis of APS-1.

Mohit Tehri

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Research Concepts:

Polyglandular Autoimmune Syndrome Type I




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improvement.

Moh'd Terbi

Question 150: A 17-year-old male presents with right knee pain.

He states that the day before he was playing basketball when he came down from a rebound and felt a pop and sudden pain in the knee. He has a knee effusion on exam and is unable to perform a straight leg raise. What are the most sensitive imaging modalities for the suspected injury?

Choices:

1. CT scan with contrast
2. Standing x-rays
3. MRI
4. Ultrasound

Moh'd Terbi

Answer: 3 - MRI

Explanations:

- Based on history and clinical exam, there should be a high suspicion for a patellar tendon rupture.
- The most sensitive imaging modality is an MRI.
- The MRI will differentiate between a partial versus a complete tear of the patellar tendon or any other disruption of the extensor mechanism.
- Ultrasound is another optional modality that can be useful in diagnosing extensor mechanism disruption. However, this is operator and user-dependent, and availability is dependent on location.

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Moh'd Terbi

Research Concepts:

Patellar Tendon Rupture




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Question 151: A 3-year-old boy with developmental delay and multiple seizure types, including absence, generalized tonic-clonic, tonic, and atonic seizures presents to the clinic. Prior EEGs have demonstrated 2 Hz spike-and-slow wave discharges as well as clinical seizures accompanied by generalized paroxysmal fast activity. He continues to have multiple seizures daily. He has continued seizures despite treatment with clobazam, rufinamide, and cannabidiol. What additional medication approved for this indication may be considered next?

Choices:

1. Oxcarbazepine
2. Ethosuximide
3. Felbamate
4. Gabapentin

Moh'd Terbi

Answer: 3 - Felbamate

Explanations:

- The clinical scenario presented is consistent with a child refractory epilepsy consistent with Lennox-Gastaut syndrome (LGS). Felbamate is FDA approved for the treatment of seizures associated with LGS.
- Felbamate is particularly effective for the treatment of atonic seizures.
- Its mechanism of action differs from his other medications as it modifies NMDA-receptor mediated activity. Given its association with aplastic anemia and idiosyncratic liver failure, it is often reserved for patients with refractory epilepsy.
- While the other medications listed may have some benefits, they are not specifically indicated for use in LGS. Methsuximide, a medication similar to ethosuximide has though been used in refractory cases of LGS, though it does not have an FDA indication for that use.

Monica Terbi

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Research Concepts:

Felbamate




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Question 152: A 1-year-old female presented to the emergency department with depressed mental status. She was afebrile, tachycardic, normotensive, with intact airway and slightly depressed respirations. Her oxygen saturation was 99%. She was given naloxone and did not respond. She responded well to physical stimuli but remained somnolent for the 2 to 3 hours but did not require intubation. She returned to her baseline and drank her bottle. She had a normal complete blood count, comprehensive metabolic panel, c-reactive protein, and urinalysis. Which additional test should be performed before consideration for appropriate disposition?

Choices:

1. Urine drug screen
2. Computed tomography of brain
3. Admission for electroencephalogram
4. Chest x-ray

Moh'd Terbi

Answer: 1 - Urine drug screen

Explanations:

- Urine drug screen should be considered when a child's presentation is consistent with marijuana or other drug exposure. Although this test is usually of very little help in evaluating a patient, it is recommended in pediatric patients in this setting.
- A positive drug screen for tetrahydrocannabinol-carboxylic acid (THC-COOH) is consistent with marijuana use; however, a negative urine drug screen does not rule it out.
- Although there are known false positives for THC-COOH, a false positive is unlikely due to higher thresholds set for detection. It is very unlikely for second-hand marijuana smoke to ever cause a false-positive urine drug screen.
- Case management should be consulted to assist in evaluating if patient's home environment is safe for discharge.

Mohammad Tarbi

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Research Concepts:

Cannabinoid Toxicity




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Question 153:

A 3-year-old male was brought in by ambulance for a cough. Initial exam reveals a blood pressure of 106/58 mmHg, heart rate of 88 beats per minute, respiratory rate of 32 breaths per minute, oxygen saturation of 96% on room air, and a temperature of 101.1 degrees Fahrenheit (38.4 C). He is noted to have retractions, nasal congestion, and inspiratory stridor at rest. A plain film of the neck is obtained, showing narrowing at the subglottic space. Which is indicated at this time?

Choices:

1. Endotracheal intubation
2. Intravenous ceftriaxone
3. Oral dexamethasone
4. Nebulized racemic epinephrine and dexamethasone

Moh'd Terbi

Answer: 4 - Nebulized racemic epinephrine and dexamethasone

Explanations:

- In patients with moderate or severe croup, first-line treatment is inhaled racemic epinephrine. They also should be treated with dexamethasone. This should be given orally, if possible.
- Croup classically presents with a barking cough, nasal congestion, rhinorrhea, as well as stridor.
- Racemic epinephrine reduces airway edema by stimulating alpha-1 receptors, causing vasoconstriction.
- A plain film is not necessary for the diagnosis but can aid in unclear cases of stridor.

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Moh'd Terbi

Research Concepts:

Stridor




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Question 154: A 16-year-old male with a past medical history of cystic fibrosis presents for a routine visit. He reports that he is at his baseline health and denies any polyuria or polydipsia. His hemoglobin A1c level is 6.3%, and a 2-hr 75 g oral glucose tolerance test plasma glucose level is 210 mg/dL. What is the most appropriate next step in the management of this patient?

Choices:

1. Start therapy with metformin
2. Start therapy with sulfonylurea
3. Start therapy with insulin
4. Obtain autoantibodies for islet cell antibody (ICA) and glutamic acid decarboxylase antibody (GAD65)

Moh'd Terbi

Answer: 3 - Start therapy with insulin

Explanations:

- The patient meets diagnostic criteria for cystic fibrosis-related diabetes and should start insulin therapy to initiate treatment. At baseline health, the diagnosis of cystic fibrosis-related diabetes is be made with a 2-hour oral glucose tolerance plasma glucose level of 200 mg/dL, fasting plasma glucose of 126mg/dL, HgbA1c level 6.5%, and/or random glucose 200 mg/dL with clinical symptoms.
- Insulin is the only recommended treatment option for cystic fibrosis-related diabetes. Initiation of early insulin therapy has been shown to improve glycemic control, improve weight gain, improve pulmonary function, and decrease mortality associated with cystic fibrosis-related diabetes.
- There is currently insufficient data to recommend non-insulin injectables or oral hypoglycemics agents in CFRD.
- A low hemoglobin A1c does not rule out cystic fibrosis-related diabetes. Hemoglobin A1c levels can be falsely low in individuals with cystic fibrosis and have a low sensitivity to detect cystic fibrosis-related diabetes. Hemoglobin A1c levels are not an effective tool to screen for CFRD but can be reliably used to monitor response to treatment after establishing a diagnosis.

Monica Terla

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Research Concepts:

Cystic Fibrosis Related Diabetes



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Moh'd Terbi

Question 155: A 17-year-old male was admitted to the intensive care unit for Escherichia coli septicemia with septic shock. After receiving three normal saline boluses, he was still hypotensive and tachycardic. A left-sided subclavian line was inserted, and norepinephrine was started at 0.2 microgram/kg/min. Blood pressure increased to 112/77 mmHg. About 15 minutes after the subclavian line insertion, patients became hypotensive with blood pressure dropping to 70/50 mmHg, and oxygen saturation decreased from 99% on room air to 80%. Which of the following could cause the sudden deterioration in the patient's clinical status?

Choices:

1. Worsening of septic shock
2. Tension pneumothorax
3. Massive hemothorax
4. Pulmonary edema

Moh'd Terbi

Answer: 2 - Tension pneumothorax

Explanations:

- The patient has developed a tension pneumothorax from the central line that was introduced into the subclavian vein. This complication can develop from the insertion of a central line.
- Placement of a subclavian central line can lead to the introduction of air into the pleural cavity creating pneumothoraxes and air leaks.
- After placement of a subclavian line, a chest x-ray is necessary to confirm the proper position and also to check for the presence of pneumothorax.
- Tension pneumothorax is a medical emergency. It is recommended to use a needle that is about 3 to 6 cm long as the thickness of the chest wall is around 4 to 4.5 cm. The site of insertion is the second intercostal space along the midclavicular line. The cannula should be left in place and, if possible, connected to an underwater seal. The presence of air bubble will indicate proper functioning.

Mohsen Terbi

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Research Concepts:

Air Leak




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Question 156: A 16-year-old boy presents to the clinic for a routine physical. He has a past medical history of childhood asthma controlled with PRN albuterol and has no concerns at today's visit. The patient's mother is accompanying him today and has some questions regarding e-cigarettes. She is a high school teacher and has noticed a profound increase in the usage of these devices at her school. She sees many kids vaping outside before and after classes. Sometimes she sees students using the devices during class when she has her back turned. She is very concerned that her own son will begin to use these devices and would like to know how this became a problem and what she can do to prevent her son from using. Which of the following is the most accurate piece of advice?

Choices:

1. It is illegal for tobacco companies to advertise to children even if it's just e-cigarettes
2. Smoking e-cigarettes in adolescence presents no significant risk for smoking tobacco later in adulthood
3. Tobacco companies are targeting youth consumers by utilizing new platforms like social media and sponsored influencers
4. Teenage attitudes towards e-cigarettes are equivalent to their attitudes towards tobacco

Moh'd Terbi

Answer: 3 - Tobacco companies are targeting youth consumers by utilizing new platforms like social media and sponsored influencers

Explanations:

- Nearly all e-cigarette companies are owned in part by other major tobacco companies. In the modern era, these companies have been able to subvert previous restrictions by using new-found advertising methods, including social media, and paid influencers.
- We know from historical industry documents that tobacco companies target young adults at major transition points in life including moving away from home, entering college, beginning new jobs, joining the military, and hanging out at bars. At the same time as these major life changes, exposure to anti-tobacco public health efforts begin tapering off in this demographic. This reduces the resiliency of naive or light smokers from progressing to heavier patterns of use.
- All of this further supports the notion that stricter regulatory measures towards e-cigarettes are required if in order to protect susceptible adolescents and young adults from carefully crafted and targeted company advertising.
- Early evidence also suggests the e-cigarette use in adolescents may lead to heavier cigarette smoking into adulthood. Furthermore, exposure to any form of nicotine has been shown to impair the development of neural circuits and to lead to a permanent impairment of neurochemical and behavioral functioning.

Mon'd Terbi

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Research Concepts:

Electronic Vaping Delivery Of Cannabis And Nicotine




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Moh'd Terbi

Question 157: A 1-year-old child was brought to the emergency department by his mother because of high-grade fever. On examination, his anterior fontanel is bulging. The child has no focal neurologic signs or papilledema. Which of the following is the most appropriate initial management of this patient?

Choices:

1. Supportive care
2. Lumbar puncture and cerebrospinal fluid analysis
3. MRI
4. Empirical antibiotic treatment

Moh'd Terbi

Answer: 2 - Lumbar puncture and cerebrospinal fluid analysis

Explanations:

- Young children with meningitis may present with bulging anterior fontanelles. If over age 2, the child will have a stiff neck instead of a bulging fontanel.
- Pyogenic meningitis should be ruled out by cerebrospinal fluid analysis.
- Bulging fontanelle is a sign of raised intracranial pressure. It is not a contraindication against lumber puncture.
- If lumbar puncture cannot be performed urgently, antibiotic treatment should be initiated. Sterilization of cerebrospinal fluid (CSF) may occur. Complete CSF sterilization occurs within 2 hours for meningococcal meningitis and within 4 hours for pneumococcus.

Mohd Terbi

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Research Concepts:

Meningitis




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Question 158: An infant born via spontaneous vaginal delivery after a normal pregnancy presents at seven days of age with fever, tachypnea, jaundice, and poor feeding. Her temperature is 102 F (38.9 C), and her respiratory rate is 72 breaths per minute. She is jaundiced, and crackles are heard at the right lung base. The remainder of the physical examination is unremarkable. Serum bilirubin level is 16 mg/dL with a direct bilirubin level of 0.2 mg/dL. Chest x-ray shows a right lower lobe infiltrate. In addition to acyclovir, what is the most appropriate treatment for this neonate?

Choices:

1. Ceftriaxone
2. Ampicillin and gentamicin
3. Vancomycin and gentamicin
4. Ampicillin, gentamicin, and vancomycin

Moh'd Terbi

Answer: 2 - Ampicillin and gentamicin

Explanations:

- This patient's clinical presentation suggests pneumonia. The most common bacteria causing late-onset neonatal infections are Group B Streptococcus, Staphylococcus aureus, S. epidermidis, Escherichia coli, and Pseudomonas species. Infection with herpes simplex virus (HSV) must also be considered.
- Antibiotics should include coverage for gram-negative organisms (gentamicin) and gram-positive organisms (ampicillin). Cefotaxime has been used with ampicillin, but the outcomes are inferior. MRSA is unlikely at 7 days in a normal neonate.
- Ceftriaxone can worsen hyperbilirubinemia, induce resistance in gram-negative organisms, and cause fatal precipitates in the lung when given with calcium.
- Because of the potentially devastating consequences of an untreated herpes simplex virus (HSV) infection in a neonate, acyclovir administration should be strongly considered for febrile neonates less than 21 days of age.

Moni's Tech

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Research Concepts:

Pediatric Pneumonia




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improvement.

Moh'd Terbi

Question 159: An 8-year-old girl presents with a nodular mass in the anterior neck, elevated thyroid-stimulating hormone (TSH) level, triiodothyronine (T3) and thyroxine (T4) levels that are within the reference range, and high-frequency hearing loss. What is the MOST likely inheritance pattern for this syndrome?

Choices:

1. Autosomal recessive
2. Autosomal dominant
3. Sex-linked dominant
4. Sex-linked recessive

Moh'd Terbi

Answer: 1 - Autosomal recessive

Explanations:

- Patients with Pendred syndrome usually present with a multinodular goiter by the age of 8-14 years.
- Patients are usually euthyroid with reference range T3 and T4 levels and display primary hypothyroidism with elevated TSH levels.
- Pendred syndrome accounts for up to 10% of cases of autosomal recessive hereditary hearing loss.
- Hearing loss is typically bilateral and most prominent in the higher frequencies.

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Moh'd Terbi

Research Concepts:

Pendred Syndrome




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Question 160: Phrynoderma, reddish-brown papules usually found around the elbows and knees, are associated with which specific vitamin deficiency?

Choices:

1. Vitamin A
2. Vitamin B12
3. Vitamin C
4. Vitamin D

Moh'd Terbi

Answer: 1 - Vitamin A

Explanations:

- This condition is generally found in early childhood and is a result of malnutrition.
- Extreme xerosis is another cutaneous finding in avitaminosis A.
- Avitaminosis A is the most common cause of childhood blindness.
- Phrynoderma commonly is associated with a deficiency of vitamins A, B, and E. It is also associated with essential fatty acid deficiency. Phrynoderma is asymptomatic or mildly symptomatic follicular hyperkeratosis, where follicular papules with central keratotic plugs block the follicle openings. New patches may be hypopigmented. Patches arise on the back of the elbows and the front of the knees and can spread to the upper forearms and thighs. Occasionally patches appear on the abdomen, back, and buttocks. The face is rarely affected. Hands and feet are spared.

Moh. Terbi

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Research Concepts:

Vitamin A Deficiency




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Question 161: A 1-year-old male patient has been brought to the outpatient clinic with complaints of proptosis in both eyes. The clinical examination reveals that the child has hypertelorism, mid-face hypoplasia, and a prominent forehead. The child is the firstborn one of consanguineous marriage. He is noted to have syndactyly involving both hands. When should the corrective surgery for the fingers be performed?

Choices:

1. Immediately after birth
2. In the first year of life
3. In the fifth year of life
4. In the pubertal period

Moh'd Terbi

Answer: 2 - In the first year of life

Explanations:

- The patient has Apert syndrome. Apert syndrome is a genetically inherited syndrome characterized by craniosynostosis (premature fusion of coronal sutures) resulting skull and facial deformities and syndactyly.
- There are three specific subtypes of hand findings in Apert syndrome based on the overall shape of the hand. They are spade (side-to-side fusion with flat palm), mitten (fusion of fingers resulting in concave palm), and rosebud (tight fusion of all digits).
- The corrective surgery for syndactyly should be done in the first year of life.
- Long-term follow up is essential to reduce the risk of developing complications related to craniosynostoses such as strabismus, sleep apnea, and elevated intracranial pressure.

Mehdi Terbi

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Research Concepts:

Apert Syndrome




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Question 162: A 17-year-old male presents to the emergency department with a 2-day history of fevers, headache, photophobia, and neck pain. The patient is 14 days status post craniotomy for a gunshot wound to the head. On exam, the patient is lethargic but oriented to person, place, and time. There is neck stiffness, but no focal deficit can be found. Workup is significant for a white blood cell count of 26,000 cells/microL and a lactate of 5.2 mmol/L. What should be the initial antibiotic therapy for this patient?

Choices:

1. Vancomycin 20 mg/kg and cefepime 2 g intravenously
2. Vancomycin 20 mg/kg and ampicillin 2 g intravenously
3. Vancomycin 20 mg/kg and piperacillin-tazobactam 4.5 g intravenously
4. Vancomycin 20 mg/kg, ceftriaxone 2 g, and ampicillin 2 g intravenously

Moh'd Terbi

Answer: 1 - Vancomycin 20 mg/kg and cefepime 2 g intravenously

Explanations:

- Cefepime is a fourth-generation cephalosporin with good Pseudomonas coverage. It is recommended in the setting of meningitis with recent neurosurgery or penetrating head trauma.
- Its structure allows better and more rapid penetration through the cell wall of aerobic gram-negative bacilli.
- Ceftriaxone can also be used in basilar fractures at a dose of 2 g IV twice a day.
- Ampicillin is primarily used for Listeria coverage. Listeria should be suspected in neonatal and older populations.

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Moh'd Terbi

Research Concepts:

Bacterial Meningitis




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Question 163: A 17-year-old male is brought into the emergency department 6 hours after ingesting an unknown amount of iron pills in a suicide attempt. The patient states he had several episodes of vomiting prior to arrival, but his symptoms have improved. He continues to have suicidal ideation. His vital signs are stable. Which of the following would be the appropriate management?

Choices:

1. Admission to an inpatient psychiatric unit
2. Observe in the emergency department for 2 hours and transfer to the inpatient psychiatric unit if the patient continues to be asymptomatic
3. Discharge home with strict return precautions
4. Obtain laboratory workup and admit to the medical floor for continued observation

Moh'd Terbi

Answer: 4 - Obtain laboratory workup and admit to the medical floor for continued observation

Explanations:

- The patient initially had gastrointestinal symptoms that had improved. He may be in the second stage of iron toxicity.
- The second stage of iron toxicity is called the latent phase and occurs 6 to 24 hours after ingestion.
- The latent phase often appears to be a period of improvement. However, the patient's condition may deteriorate, and he may progress to later stages of iron toxicity.
- Patients who have gastrointestinal symptoms initially but then improve need to be medically observed before transferring to a psychiatric unit. They should have a 24-hour sitter to prevent further suicide attempts. These patients could be in the second stage of iron toxicity, and their condition could deteriorate.

Moh'd Terbi

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Research Concepts:

Iron Toxicity




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Question 164: A newborn male is evaluated in the NICU a few hours after normal vaginal delivery at 39 weeks to a healthy G3P3 female. The APGAR score was 9 at 1 and 5 minutes. The mother's antepartum labs from the first prenatal visit were within normal limits, and all of her follow-up prenatal visits were reassuring. The fetal anatomy scan showed no abnormalities. The mother did not travel during this pregnancy or have any sick contacts. Throughout the pregnancy, she had sexual intercourse and occasionally used contraception. The infant's vital signs are reassuring. During the physical examination of the infant, the provider notes hepatomegaly on abdominal palpation. The rest of the physical exam was non-contributory. A head CT scan revealed hydrocephalus and intracranial calcification. What advice could the mother have received from her provider during her pregnancy to prevent these newborn complications?

Moh'd Terhi

Choices:

1. Receive recommended vaccinations during her first trimester
2. Use of appropriate barrier contraception during intercourse
3. Obtain an elective cesarean section at term
4. Avoid consumption of under-cooked meat during gestation

Answer: 4 - Avoid consumption of under-cooked meat during gestation

Explanations:

- Maternal-fetal infections can occur at any time during pregnancy, labor, and delivery. The most common infections are TORCHeS.
- In this example, the maternal infection with protozoan parasite gondii from undercooked meat caused the classic presentation of congenital toxoplasmosis. The infection is acquired via transplacental transmission. The newborn can present with hydrocephalus, intracranial calcifications, microcephaly, chorioretinitis, ring-enhancing lesions on MRI, hearing impairment, and hepatomegaly. Some lab abnormalities include hyperbilirubinemia and thrombocytopenia.
- Other causes of congenital Toxoplasmosis occur via cat feces exposure and unwashed fruits or vegetables from contaminated soils. Typically Toxoplasmosis is asymptomatic in adults with a competent immune system; however, it can cause severe sequelae in the newborn.
- Prenatally the diagnosis can be made via maternal serology or amniocentesis. In the case of a newborn infant presenting with these symptoms, neonatal serology can be performed. Treatment includes Pyrimethamine and sulfadiazine and folinic acid for one year.

Wahid Terbi

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Research Concepts:

Antepartum Infections

StatPearls Knowledge Base

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Moh'd Terbi

Question 165: A 17-year-old female presents to the emergency department after ingesting an unknown amount of a food warming fuel. She has nausea, epigastric discomfort, and blurred vision. A physical exam reveals epigastric tenderness, sluggish pupillary response to light, and decreased visual acuity. Her basic metabolic panel demonstrates a bicarbonate of 4 mmol/L. What is the most appropriate treatment plan?

Choices:

1. Dialysis
2. Fomepizole, resuscitation, admit for dialysis
3. Fomepizole and resuscitation
4. Bicarbonate administration while awaiting confirmatory test results

Moh'd Terbi

Answer: 2 - Fomepizole, resuscitation, admit for dialysis

Explanations:

- This patient ingested a food warming fuel, and food warming fuels are known to contain methanol.
- Symptoms of end-organ toxicity and acidosis are indications for dialysis in methanol toxicity. Dialysis has been shown to markedly decrease the length of stay.
- Fomepizole should be given immediately in this scenario so that the patient can respond to resuscitation. Normal saline should be administered.
- Confirmatory test results may take hours to days in some facilities and should not delay treatment. Bicarbonate infusion may be of some benefit. Bicarbonate alone will not be an effective treatment.

Mohd Terbi

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Research Concepts:

Methanol Toxicity




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Question 166: A 4-year-old female presents to the clinic for short stature. Her physical exam is significant for webbed neck, high arched palate, and a low hairline. She had also been referred to cardiology once for a murmur found on physical exam. Her vitals are within normal limits, and she has no symptoms. Thyroid function tests are performed, but no need for any treatment is found based on the results. Which of the following lab results are consistent with the diagnosis?

Choices:

1. Low free T4, normal TSH, high total T4
2. Normal free T4, normal TSH, low total T4
3. High free T4, high TSH, normal total T4
4. Low free T4, low TSH, low T4

Moh'd Terbi

Answer: 2 - Normal free T4, normal TSH, low total T4

Explanations:

- Based on this patient's physical exam, she has Turner syndrome which can sometimes be associated with thyroxine-binding globulin (TBG) deficiency as it is an X-linked condition.
- Turner syndrome patients have only an X chromosome, so if they have a mutation in the gene responsible for TBG, they will present with complete TBG deficiency.
- Since the stem states that no treatment is needed, it is most likely that this patient has TBG deficiency.
- TBG deficiency is characterized by normal TSH and free T4 but total T4 is low.

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Moh'd Terbi

Research Concepts:

Thyroxine-Binding Globulin Deficiency




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Question 167: Which of the following is most useful for making a definitive diagnosis of ankylosing spondylitis (AS)?

Choices:

1. HLA-B27 positivity
2. Radiographic bilateral sacroiliitis
3. Low back pain with family history of AS
4. Presence of back pain in the second half of the night

Moh'd Terbi

Answer: 2 - Radiographic bilateral sacroiliitis

Explanations:

- Though HLA positivity, family history, and a typical pattern of night pain are frequent features of ankylosing spondylitis (AS), it is the radiographic findings which allow it to be distinguished from other spondyloarthropathies.
- Plain x-rays are the first imaging study of choice to assess the sacroiliitis as part of axial spondyloarthritis in most patients with AS.
- Magnetic resonance imaging of the sacroiliac joints is used to assess the disease in young patients or those with a short duration of symptoms.
- About 10% to 15% of patients with ankylosing spondylitis have features of normochromic normocytic anemia of chronic disease. The ESR and C-reactive protein levels also are elevated in about three-fourths of patients. These levels often are used to assess the response to treatment.

Mona Terbi

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Research Concepts:

Ankylosing Spondylitis




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Question 168: A 16-year-old boy presents to the clinic to establish care. He has a strong family history of diabetes mellitus. His fasting blood sugar is 127 mg/dL. Upon repeat testing, his fasting blood sugars are 115, 130, and 100 mg/dL. Which of the following findings/risk factors, if present, would be most consistent with mature onset diabetes of the young (MODY) in this patient?

Choices:

1. History of diabetes including his mother and maternal grandmother at ages 45 and 65 years, respectively
2. High C-peptide level with normal BMI
3. High CRP
4. Retinopathy and peripheral neuropathy

Moh'd Terbi

Answer: 2 - High C-peptide level with normal BMI

Explanations:

- Patients with MODY are typically lean and have good pancreatic function shown by normal or high C-peptide levels.
- Patients with MODY typically have strong family histories of diabetes, which stretch across generations, but they are usually diagnosed in childhood or early young age.
- The majority of patients with MODY can be successfully treated with diet or sulfonylureas. If they require insulin, it is usually small amounts to cover basal needs and not necessarily prandial needs.
- Most patients with MODY do not develop diabetes complications except in rare types like MODY-5, where there can be progressive loss of renal function independent of diabetic nephropathy.

Moh'd Terbi

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Research Concepts:

Maturity Onset Diabetes in the Young




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Question 169: A 16-year-old patient returns home after traveling to Africa and is seen in the emergency department. His vitals reveal a blood pressure of 90/60 mmHg, respiratory rate of 22, pulse of 43 beats/min, and temperature 103 degrees F. He appears slightly jaundiced and has numerous petechiae. The patient may have which of the following conditions?

Choices:

1. Tuberculosis
2. Yellow fever
3. Leishmaniasis
4. Lymphoma

Moh'd Terbi

Answer: 2 - Yellow fever

Explanations:

- With fever, most people develop tachycardia.
- In yellow fever, the patient develops bradycardia.
- A fever with bradycardia is known as Faget sign and is often seen in yellow fever.
- The diagnosis requires a thorough travel history and record of immunizations. Patients may present with headache, malaise, and myalgia. A physical exam may reveal Faget sign or pulse fever dissociation, facial flushing, and conjunctival injection. Blood work may reveal leukopenia with elevated transaminase levels. If the liver is involved, a coagulation profile may be abnormal. Yellow fever can be diagnosed using enzyme-linked immunosorbent assay (ELISA) and polymerase chain reaction assay. Other investigations depend on what organ is involved. If there is evidence of altered mentation, a lumbar puncture and a CT scan are performed.

Michi'a Terbi

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Research Concepts:

Yellow Fever




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Question 170: A 15-year-old highly competitive gymnast who specializes on the rings presents to the clinic with progressively worsening pain in his right shoulder. On exam, there is generalized weakness and tenderness over the proximal humeral physis. There is no swelling. Radiographs reveal a normal appearing proximal humeral physis. What is the most likely diagnosis?

Choices:

1. Pommel arm
2. Subdeltoid bursitis
3. Little League shoulder
4. Rotator cuff tendonitis

Moh'd Terbi

Answer: 3 - Little League shoulder

Explanations:

- Although typically seen in throwing athletes, Little League shoulder is not a diagnosis exclusive to throwing athletes. Cases have also been described in gymnasts, especially those who compete on the rings, and tennis players.
- Tenderness over the proximal humeral physis is a common physical exam finding in Little League shoulder although not all patients will have this finding.
- Negative radiographs do not rule out the diagnosis of Little League shoulder. While the classic finding is a wide proximal humeral physis, not all patients will have this finding.
- There may be subtle swelling on the physical exam of a patient with Little League shoulder. Not all patients will have swelling.

Mohd Terbi

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Research Concepts:

Proximal Humeral Epiphysiolysis




We update eBooks quarterly and Apps daily based on user feedback. Please tap flag to report any questions that need improvement.

Question 171: An African American female is brought to the emergency department with acute onset shortness of breath that has progressively worsened over the past 4 hours at home. She has a peak flow meter at home, and the number prior to arrival was 220 L, which is 51% of predicted. She has known bronchial asthma but hasn't had an exacerbation requiring an ED visit or hospitalization before. Her FEV1 in spirometry six months back was at 89%. After 2 hours of management in the emergency department, she feels significantly better and is able to speak in short sentences. Last breathing treatment was 15 minutes back. Repeat PEFR is 310 L/min, which is 68% of predicted. Her wheezing has improved, and she wants to go home. Which of the following is the next best step in the management of this patient?

Choices:

Mon'd Terbi

1. Discharge her home as her initial PEFR was above 50% and 200 L/min
2. DIscharge her home as PEFR improved by 12% and above 300 L/min
3. Assess one more peak flow and symptoms in another 2 hours in the ED
4. Discharge her home as she has normal FEV1 and no prior history of severe exacerbation

Answer: 3 - Assess one more peak flow and symptoms in another 2 hours in the ED

Explanations:

- Kelsen and colleagues in a study showed a 50% relapse rate in patients treated for 2 hours or less in a facility as opposed to 4% in those treated and observed for an additional 2 to 4 hours. Therefore even though she feels better, she should be requested to stay back in ED for at least 4 hours.
- In a study by Stein and Cole, an adequate response to treatment in ED was characterized as visual improvement in symptoms which sustains 30 minutes or beyond the last bronchodilator dose, and a PEFR greater than 70% of predicted. Her response immediately post-treatment was 67%.
- In the same study by Stein and Cole, initial PEFR on presentation did not predict the need for hospitalization.
- An adequate response to treatment was also characterized by an improvement in FEV1 by 10% or above 70% of predicted, although it may not be the most practical approach at the bedside.

Vidhi Tekri

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Research Concepts:

Status Asthmaticus




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improvement.

Moh'd Terbi

Question 172: A 13-year-old white female patient presents with a sudden onset of severe lower extremities weakness and urine incontinence. At the onset of weakness, the patient also reports pain that is stabbing in nature, focused around the lower part of the thoracic spine. Past medical history is significant for nocturnal episodes of spontaneous epistaxis happened on several occasions for the last 3 years. No further investigation was carried on in this respect. The patient's mother reports that the patient's father who is 45 years old was diagnosed with a disease with multiple lesions in the lungs, gastrointestinal tract (GIT) and liver after investigation for GI bleeding. She added that the patient's father had a positive genetic test. General physical examination of the patient showed that she is conscious and cooperative. There are dilated vessels under her tongue and some cutaneous dilated blood vessels in different areas of her body. The neurological exam is normal in upper limbs, upper abdominal cutaneous reflexes elicited on both upper quadrants, but they are absent on both lower quadrants of the abdomen, muscle strength is 0/5 in all muscle groups of both lower limbs. Knee and ankle jerks are +3, and Babinski is detected bilaterally, weak anal tone with preservation of some perianal sensation for pinprick. She also has hypoesthesia starting from T11 level downward. What is the other clinical sign that best supports the sensory level finding to confirm the lesion level?

Mohit Tehlan

Choices:

1. Voluntary anal contraction
2. Bulbocavernous reflex
3. Beevor sign test
4. Oppenheim sign

Answer: 3 - Beevor sign test

Explanations:

- The only clinical test amongst these neurological exams that can help in localization of spinal cord lesion is Beevor sign.
- In this case, it is best to be performed by asking the patient to flex her neck from a recumbent position. Asking this patient to sit in upright position could be difficult in her condition because of pain.
- Traditionally, Beevor sign means cephalad movement of the umbilicus upon truncal flexion from the supine position. This is indicative of the weakness of the lower half of the rectus abdominis muscle. When the umbilicus moves downward, this indicates the upper half of rectus abdominis muscle weakness, and it is considered as a positive Beevor sign. Very few authors, in some medical sites, include oblique movement of the umbilicus with positive Beevor sign.
- The patient has a ruptured spinal AVM- type IV or what is so-called perimedullary arteriovenous fistulas. Neuroimaging would show the lesion extending from T11 to T12 segment. The patient most likely has Hereditary Hemorrhagic telangiectasia (Osler-Weber-Rendu Disease).

Mohit Tariyal

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Research Concepts:

Beevor Sign



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Moh'd Terbi

Question 173: A previously healthy 16-year-old male presents with fever and rash after recently having nasal packing placed following surgery. He is tachycardic with an initial blood pressure of 80/50 mmHg and a temperature of 102 F. The rash is diffuse, red, and painful, and he has ulceration of the oral mucosa. Which of the following is the appropriate management and disposition?

Choices:

1. Aggressive fluid hydration, antibiotics, and admission to the intensive care unit
2. Aggressive fluid hydration, removal of the packing, IV antibiotics, and admission to the intensive care unit
3. Removal of the packing, intravenous fluids, oral antibiotics, and discharge home
4. Intravenous hydration, removal of the packing, and admission to the floor

Moh'd Terbi

Answer: 2 - Aggressive fluid hydration, removal of the packing, IV antibiotics, and admission to the intensive care unit

Explanations:

- This patient has toxic shock syndrome and requires intensive care unit admission.
- While intravenous fluids and antibiotics also are appropriate, any source of infection and toxin production needs to be removed.
- Toxic shock syndrome can be caused by group A Streptococcus or Staphylococcus aureus.
- Intravenous penicillin should be administered in addition to a beta-lactamase resistant antibiotic.

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Moh'd Terbi

Research Concepts:

Toxic Shock Syndrome




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Question 174: A late preterm baby girl was born by an urgent cesarean section delivery due to non-reassuring fetal heart rate tracings. Her APGAR scores were 5 and 7 at 1 and 5 minutes, respectively. She required two cycles of positive pressure ventilation, then a nasal continuous positive airway pressure (nasal CPAP) was applied. Umbilical cord blood gases analyses show an arterial pH of 6.95 and a base deficit of 10.4 mEq/L. A few hours after birth, abnormal eye movements and lip-smacking are noticed. Which of the following findings at birth is the strongest predictor for the onset of these abnormal movements?

Choices:

1. The combination of abnormal fetal heart rate tracings, low APGAR scores at birth, the need for resuscitation, and an arterial cord pH of 6.95
2. The combination of abnormal fetal heart rate tracings, low APGAR scores at birth, the need for resuscitation, and an arterial base deficit of 10.4 meq/L
3. The combination of an arterial cord pH of 6.95 and an arterial base deficit of 10.4
4. An arterial cord pH of 6.95 is solely the strongest predictor for the onset of neonatal seizures

Mahla Tehbi

Answer: 1 - The combination of abnormal fetal heart rate tracings, low APGAR scores at birth, the need for resuscitation, and an arterial cord pH of 6.95

Explanations:

- When a cord pH less than 7.00 is associated with abnormal clinical findings (abnormal fetal heart tracings, 5-minutes Apgar score equal to or less than 5, a requirement for intubation), it is strongly predictive of adverse neurologic sequelae.
- When a base deficit of more than 12 mEq/L is associated with abnormal clinical findings (abnormal fetal heart tracings, 5-minutes Apgar score equal to or less than 5, a requirement for intubation), it is strongly predictive of adverse neurologic sequelae.
- 80% of non-vigorous newborns born with a pH less than 7.00 and/or a base deficit of more than 12 mEq/L develop seizures in the first few days after birth.
- Most vigorous infants with a cord pH less than 7.00 do not develop neurologic problems after birth and when followed for a period of 6.5 years.

Mon'd Tech

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Research Concepts:

Cord Blood Gas




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improvement.

Moh'd Terbi

Question 175: A 17-year-old male brought in by emergency medical services to the emergency department for respiratory distress that developed acutely while at home. His mother reports that 10 minutes before this, he was eating a cookie and has a known allergy to peanuts. While in the emergency department, he is tachypneic with retractions and stridor, he is afebrile, his blood pressure is 80/52 mmHg, and he is tachycardic. There is noted to be diffuse urticaria. The patient is given epinephrine immediately as the treatment of choice for anaphylaxis. What additional medication is effective in treating the cutaneous manifestations of anaphylaxis?

Choices:

1. Diphenhydramine
2. Albuterol
3. Ibuprofen
4. Methylprednisolone

Moh'd Terbi

Answer: 1 - Diphenhydramine

Explanations:

- Diphenhydramine is the antihistamine of choice when treating the cutaneous effects of anaphylaxis. Diphenhydramine is H1 histamine blocker. H2 blockers, such as famotidine, may be used in combination with diphenhydramine in anaphylaxis as well.
- Ibuprofen will not alleviate the cutaneous symptoms of anaphylaxis.
- Albuterol can be administered to reverse bronchospasm due to anaphylaxis.
- Methylprednisolone is a corticosteroid and may be helpful for biphasic anaphylaxis.

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Moh'd Terbi

Research Concepts:

Diphenhydramine




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Question 176: A 3-week-old infant is brought in with a fever, poor feeding, and irritability. His vitals show a temperature of 39.4 Celcius, a blood pressure of 60/40 mmHg, a pulse rate of 180 beats per minute, a respiratory rate of 60 breaths per minute, and oxygen saturation is 96% at room air. Physical examination reveals an erythematous, bulging tympanic membrane with yellow purulent middle ear effusion. The rest of the exam is normal. What is the best management strategy?

Choices:

1. Obtain blood and urine cultures and discharge the patient on oral amoxicillin at 90 mg/kg/day.
2. Obtain blood and urine cultures, admit the patient and administer intravenous ceftriaxone.
3. Obtain blood, urine and cerebrospinal fluid (CSF) cultures, give ampicillin and cefotaxime before admitting the child to the hospital.
4. Obtain blood, Urine and cerebrospinal fluid (CSF) cultures, give clindamycin and gentamicin before admitting the child to the hospital.

Mehdi Terbi

Answer: 3 - Obtain blood, urine and cerebrospinal fluid (CSF) cultures, give ampicillin and cefotaxime before admitting the child to the hospital.

Explanations:

- Although the infant has otitis media, at 3 weeks of age, a full sepsis evaluation is needed including a lumbar puncture as the child in the vignette is irritable and shows signs of sepsis with tachycardia and tachypnea. Oral antibiotic treatment is not enough. The patient can not be managed at home and needs to be admitted.
- Neonates with fever may present with poor feeding, irritability, and vomiting. Diapers with strong urine may indicate dehydration or urinary tract infection (UTI). Pediatric straight catheterization for a good, clean urine sample should be done to rule out UTI as a causative factor in neonates in a sepsis workup. Children with late-onset neonatal sepsis could have bacteremia or meningitis. It is inappropriate in this child to do only partial sepsis work up with cultures of blood and urine. Full septic workup includes obtaining culture for blood, urine, and cerebrospinal fluid.
- Pathogens involved in late-onset sepsis can cause bacteremia and meningitis. A full sepsis workup should be done for a febrile infant younger than 28 days of age. It includes obtaining a culture for blood, urine, and cerebrospinal fluid. Parents should be encouraged on sepsis workup, its importance, and what it entails. Bacterial pathogens that are involved in late-onset sepsis include Listeria, Pneumococcus, Meningococcus, and group B streptococcus. Coverage for Listeria requires ampicillin. A third-generation cephalosporin is needed for coverage of pneumococcus, meningococcus, and group B streptococcus. The student should know the pathogenesis of late-onset sepsis, the difference between early and late-onset sepsis, work up involved in the management, and the appropriate antibiotics.

Mohit Tehri

- Ampicillin and gentamycin are a good choice for early-onset neonatal sepsis as it is caused by vertical transmission of infection from the mother or fetal or neonatal aspiration. They are not a good choice for late-onset sepsis, the source could be from horizontal transmission from the mother, hospital, or community-acquired pathogens.

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Research Concepts:

Fever In A Neonate



Moh'd Tarbi


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Question 177: A 4-year-old male with a history of multiple dental caries presents with one week of headache and fevers ranging from 101 F to 102 F. A CT head scan showed a 4 cm x 5 cm ring-enhancing lesion over the right parietal lobe. The abscess was evacuated and sent for culture. What did the culture most likely grow?

Choices:

1. Viridans streptococcus
2. Staphylococcus epidermidis
3. Escherichia coli
4. Toxoplasmosis gondii

Moh'd Terbi

Answer: 1 - Viridans streptococcus

Explanations:

- Brain abscess in children is rare in this era of pneumococcal and Haemophilus influenzae vaccination. Usually, a brain abscess is due to an extension of a local infection such as otitis media, mastoiditis, sinusitis, or from trauma to the head. Brain abscess in a child with a history of dental caries or endocarditis is very rare. However, it is important to elucidate the underlying predisposing condition to choose empiric antibiotics.
- Brain abscess secondary to dental work is due to viridans streptococci and oral anaerobes. Consider Streptococcal species if the brain abscess is secondary to endocarditis. Consider Pseudomonas if it is secondary to chronic otitis, mastoiditis, or sinusitis.
- The preferred empiric treatment for a brain abscess secondary to dental work is ceftriaxone plus metronidazole. The preferred empiric treatment for brain abscess secondary to endocarditis is vancomycin plus gentamicin in a prosthetic valve; ampicillin plus gentamicin or third-generation cephalosporin plus vancomycin in a natural valve. The preferred empiric antibiotic choice for brain abscess secondary to chronic otitis, mastoiditis, or sinusitis is cefepime plus metronidazole.
- Surgical drainage is the treatment of choice along with prolonged antibiotic therapy for at least 4 to 6 weeks.

Mehmet Terlemez

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Research Concepts:

Brain Abscess

StatPearls Knowledge Base

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Moh'd Terbi

Question 178: A 12-year-old female presents to the emergency department in severe respiratory distress. The patient appears toxic, and her vital signs show a temperature of 103.7 F (39.8 C), a heart rate of 152 beats per minute, a blood pressure of 107/73 mmHg, and an oxygen saturation of 87% on room air. On lung auscultation, bilateral rhonchi and coarse breath sounds are appreciated. No stridor is present. On neck exam, she is tender to palpation over the left neck with multiple tender lymph nodes, but no discreet mass or fluctuance is appreciated. A portable chest x-ray is consistent with acute respiratory distress syndrome (ARDS) and the patient is intubated without incident. Per the patient's mother, she was recently treated with penicillin for tonsillitis. She is up to date with her vaccinations and the mother denies additional past medical history. Given the patient's presentation and most likely diagnosis, which organism was the most likely cause of her tonsillitis?

Moh'd Terbi

Choices:

1. Rhinovirus
2. Diphtheria
3. Fusobacterium necrophorum
4. Haemophilus influenza

Answer: 3 - Fusobacterium necrophorum

Explanations:

- The patient is presenting with Lemierre disease, a rare complication of tonsillitis.
- Lemierre disease should be considered in patients who have been diagnosed with tonsillitis and are unresponsive to penicillin. She meets systemic inflammatory response syndrome criteria and her chest x-ray is significant for ARDS.
- This complication is most commonly preceded by tonsillitis caused by Fusobacterium necrophorum.
- In the era of modern antibiotics, mortality is low though complications can include ARDS, osteomyelitis, and meningitis.

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Moh'd Terbi

Research Concepts:

Tonsillitis




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Question 179: A 10-year-old boy presents to the clinic with erythematous well-demarcated patches of variable intensity, sometimes surrounded by an anemic halo; these may coalesce into large figurate patches. Hyperkeratosis is also noted in this patient. Skin lesions have a history of exaggerating with emotional stress and sudden temperature changes. What treatment modality should be recommended?

Choices:

1. A low-dose of oral retinoids
2. A high-dose of oral corticosteroids
3. Dermocorticoids and antihistamines only
4. Abstention

Moh'd Terbi

Answer: 1 - A low-dose of oral retinoids

Explanations:

- Low-dose of oral retinoids is an effective treatment in erythrokeratodermia variabilis.
- Retinoids help for reducing the hyperkeratotic plaques shown in erythrokeratodermia variabilis.
- Retinoids are not contraindicated for children.
- Topical treatment only is not preferred in this situation and should be adjuvant to retinoids.

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Research Concepts:

Moh'd Alerbi

Erythrokeratodermia Variabilis




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Question 180: A 4-year-old female is rushed to the emergency department. She ingested some liquid found in the garage. She is dizzy, lacks muscular coordination, and is confused. Urinalysis reveals calcium oxalate crystals on microscopy. What is the most likely cause of her toxic state?

Choices:

1. Methanol
2. Ethylene glycol
3. Isopropanol
4. Organophosphates

Moh'd Terbi

Answer: 2 - Ethylene glycol

Explanations:

- Most commonly found in antifreeze, ethylene glycol has a sweet taste causing ingestion by children and small animals who are then susceptible to toxicity.
- One antidote is the administration of fomepizole.
- Ethanol can also be used because it also competes with the enzyme alcohol dehydrogenase, which initiates ethylene glycol metabolism. Sodium bicarbonate can be used to help correct the large anion-gap metabolic acidosis that usually accompanies ethylene glycol toxicity.
- Eventually, the patient can become anuric with subsequent kidney failure due to tubular blockage from oxalate crystals and stones.

Mohd Terbi

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Research Concepts:

Ethylene Glycol Toxicity




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Question 181: A 17-year-old basketball player comes into the clinic after hurting his left lower leg during a basketball game yesterday. He is having difficulty walking and there significant tenderness of the distal posterior aspect of the lower leg. He has a positive Thompson test on exam. What injury did he sustain and where does this structure insert?

Choices:

1. Tibialis posterior rupture and calcaneus
2. Achilles tendon rupture and calcaneus
3. Achilles tendon rupture and talus
4. Tibialis posterior rupture and talus

Moh'd Terbi

Answer: 2 - Achilles tendon rupture and calcaneus

Explanations:

- There are three muscles that combine to form the Achilles tendon and attach on the calcaneal tubercle. These muscles are the primary plantar flexors of the foot and consist of the gastrocnemius, soleus, and plantaris. The Thompson test involves squeezing the calf resulting in no movement of the calf. This signifies likely rupture of the Achilles tendon.
- There are six muscles that originate on portions of the calcaneus and provide movement to the toes. The extensor digitorum brevis originates on the dorsal side of the calcaneus and provides extension of the second, third, and fourth digits. The abductor hallucis originates on the medial process of calcaneal tuberosity and abducts the first digit. The extensor hallucis brevis originates on the dorsal aspect of the calcaneus and extends the first digit. The abductor digiti minimi originates on the calcaneal tubercle and provides flexion and extension of the fifth toe. The flexor digitorum brevis originates on the calcaneal tubercle and helps provide flexion to the second, third, and fourth digits. The quadratus plantae originates on the lateral and medial processes of the calcaneus and helps provide flexion at the distal interphalangeal joints.
- A number of ligaments attach to the calcaneus as well and some of them are the deltoid ligament, calcaneofibular ligament, long plantar ligament, and plantar calcaneonavicular ligament.
- Other connective tissue attaches to the calcaneus and some include the plantar aponeurosis, extensor retinaculum, flexor retinaculum, and fibular retinaculum.

Medical Terms

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Research Concepts:

Achilles Tendon Rupture

StatPearls Knowledge Base

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Moh'd Terbi

Question 182: A full-term baby boy was born by normal spontaneous vaginal delivery without any reported complications. The fetal heart rate tracing prior to delivery was reassuring, and the newborn was vigorous and did not require any intervention at birth. He was admitted to the nursery for routine neonatal care. A few minutes later, the pediatric team was informed that a cord blood gas analysis was routinely performed and showed an arterial pH of 6.98. What is the best next step in the management of this newborn?

Choices:

1. Transfer the newborn to the neonatal intensive care unit for close observation
2. Transfer the newborn to the neonatal intensive care unit and immediately perform an arterial blood gas
3. Transfer the newborn to the neonatal intensive care unit and immediately initiate therapeutic hypothermia
4. Reassure the mother and continue routine neonatal care in the nursery

Mona Terbi

Answer: 4 - Reassure the mother and continue routine neonatal care in the nursery

Explanations:

- Most infants with a cord pH less than 7 do not develop neurologic problems after birth.
- Several studies showed that most infants with a cord pH less than 7 do not develop adverse long-term outcomes, even when followed for a period of 6.5 years.
- Infants born with a cord pH less than 7 without other abnormal clinical findings do not need any investigation or NICU admission.
- A cord pH of less than 7 in non-vigorous newborns strongly correlates with the development of neonatal encephalopathy.

Mohd Terbi

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Research Concepts:

Cord Blood Gas




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Question 183: A 17-year-old female presents with a 6-month history of lethargy and exhaustion, compounded by a 2-month history of shortness of breath on exertion, which she feels has been getting worse. She has no significant past medical, surgical, or family history, and takes no medications. She reports heavy menses. What is the best management strategy for this patient?

Choices:

1. Ibuprofen and oral iron supplements
2. Mefenamic acid, tranexamic acid, and oral iron supplements
3. IV iron replacement
4. Blood transfusion

Moh'd Terbi

Answer: 2 - Mefenamic acid, tranexamic acid, and oral iron supplements

Explanations:

- This patient likely has iron deficiency anemia caused by ongoing monthly blood loss during her menses.
- Because of this, she should be treated for the cause and the effect of the blood loss.
- Supplemental iron for at least 6 months will help with the low iron levels.
- Oral mefenamic acid, an NSAID, and tranexamic acid, reduce menstrual bleeding volume by up to 75 percent. This will help to stop the anemia from recurring.

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Moh'd Terbi

Research Concepts:

Menorrhagia




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Question 184: An 18-month-old is brought in by her biological parents for a well-child visit. The child appears well-nourished, well-hydrated and has maintained her height and weight in the seventy-fifth percentile. The parents describe her as fussy and prone to explosive tantrums when they enter a noisy environment or a brightly lit room. The parents report that she avoids physical contact and prefers to play alone. She is a picky eater and getting her dressed is extremely difficult. She has not yet started talking but will point, grunt, or use signs to communicate with others. What should be done next?

Choices:

1. Refer to a child psychiatrist for medication evaluation focused on reducing fussiness and tantrums
2. Refer for evaluations by a child psychologist and a physical, occupational, and speech therapist
3. Nothing because she is only 18 months of age and is close enough to the “terrible twos” that the parents should not be concerned about the behavior
4. Make a referral to your state’s child protective services as it is clear that the parents are not providing her with enough attention

Mohit Tehlan

Answer: 2 - Refer for evaluations by a child psychologist and a physical, occupational, and speech therapist

Explanations:

- Children on the autism spectrum often present with age-appropriate behaviors, such as tantrums or explosive anger; however, the intensity, duration, and frequency are more than age expected norms. Furthermore, the lack of spontaneous speech by 18 months of age should raise concern for developmental delay.
- Behavioral difficulties, such as tantrums, explosive behavior, or task avoidance can be manifestations of sensory processing difficulties associated with developmental delays and autism spectrum disorder.
- Although parental involvement is essential to maximizing a child's development, it would be difficult to ascertain emotional neglect without a comprehensive psychological evaluation. Children on the autism spectrum have difficulty expressing emotions and often are described as aloof and unwilling to be hugged or touched.
- It is important to listen to the concerns of parents and refer children to experts sooner rather than later to maximize the benefits from early intervention and prevent delays in treatment. Children on the autism spectrum benefit from consistent treatment targeting lagging skills.

Mohsin Tariq

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Research Concepts:

Autism Spectrum Disorder

StatPearls Knowledge Base

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Moh'd Terbi

Question 185: A mother brings her 14-year-old son in for an evaluation of a rash on his legs. On examination, there are scattered erythematous papules with overlying excoriations. On one papule, a small red dot is seen. This is examined and found to be a reddish 0.2-millimeter arthropod. What is the most likely culprit?

Choices:

1. Mites
2. Scabies
3. Hookworm
4. Bedbugs

Moh'd Terbi

Answer: 1 - Mites

Explanations:

- Chiggers are the common name of the trombiculid mite, an arachnid whose larval stage feeds on the skin of many animals, including humans.
- Larval mites will attach to hosts passing through tall grass or brush and migrate until they find an ideal feeding location or until they are stopped by close-fitting clothing. Bites frequently accumulate next to waistbands, socks, or underwear.
- Bites are intensely pruritic, and the itching may last for as long as two weeks.
- Most of the time, the small reddish mites will not be seen on the skin since they are easily dislodged by scratching. Occasionally, they will be found on the skin, which aids significantly with the diagnosis.

Moh'd Terbi

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Research Concepts:

Chigger Bites




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Question 186: A double-bubble sign is seen on abdominal radiographs obtained at birth. This can account for what complication suffered by the mother during pregnancy?

Choices:

1. Oligohydramnios
2. Polyhydramnios
3. Post-dated birth
4. Folic acid deficiency

Moh'd Terbi

Answer: 2 - Polyhydramnios

Explanations:

- Polyhydramnios is the accumulation of excess amniotic fluid during pregnancy exceeding 1500 to 2000 mL.
- There are maternal and fetal causes of polyhydramnios. Maternal causes include congestive heart failure and gestational diabetes. Gestational diabetes can cause fetal hyperglycemia and fetal polyuria. Fetal causes include congenital anomalies that interfere with swallowing and proximal intestinal obstruction including duodenal atresia.
- Other anomalies causing polyhydramnios include esophageal atresia, neck masses, and renal disorders. In approximately 60% to 70% of cases, no cause can be identified. Thus, it is termed idiopathic polyhydramnios.
- Polyhydramnios increases the risk for cord prolapse, placental abruption, and preterm delivery.

Mona Terbi

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Research Concepts:

Duodenal Atresia And Stenosis




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Question 187: A 16-year-old female with past medical history of asthma and advanced HIV and a CD4 count of 200 cells per cubic millimeter developed lesions and a worsening cough that was found to be caused by a Sporothrix infection after gardening. What is the best initial treatment for this Sporothrix infection?

Choices:

1. Potassium iodide
2. Amphotericin B
3. Amoxicillin
4. Itraconazole

Moh'd Terbi

Answer: 2 - Amphotericin B

Explanations:

- Before the introduction of azole compounds in the 1990s, potassium iodide was the treatment of choice. Itraconazole is currently the first treatment of choice in immune-competent patients.
- Amphotericin B (3-5 mg/kg/day) is the drug of choice in immunocompromised patients.
- For children, 5 to 10 mg/kg/day of itraconazole is recommended.
- Itraconazole is the treatment of choice in immunocompetent patients.

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Moh'd Terbi

Research Concepts:

Sporotrichosis




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Question 188: A 2-year-old child with a documented history of egg allergy visits for follow up. He is accompanied by his mother, who mentions that she and her husband are trying to incorporate extensively heated eggs into their child's diet to build tolerance. Although this approach has significant benefits, what is one major potential concern with this approach?

Choices:

1. Damage to the oral mucosa from overcooked egg dishes
2. IgA mediated response to egg yolk allergens
3. Risk of an allergic reaction due to inconsistencies in egg content and heating
4. Immunologic overexpression of egg white epitopes leading to increased risk of reaction

Moh'd Terbi

Answer: 3 - Risk of an allergic reaction due to inconsistencies in egg content and heating

Explanations:

- Some studies have discussed the benefits of exposure to heated egg products including increased tolerance.
- Tolerance to extensively heated egg is considered an adequate prognostic factor for egg allergy.
- One of the major drawbacks to this approach include the increased risk of reaction. \This can be due to incomplete cooking allowing for exposure to undercooked egg or inconsistent amounts of egg product leading to overexposure to egg allergen.
- In patients with significant allergies, anaphylaxis is always a concern. Anaphylaxis should be treated promptly with epinephrine.

Moh'd Terbi

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Research Concepts:

Egg Allergy




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Question 189: A 3-year-old male, who started taking trimethoprim-sulfamethoxazole six days ago for a urinary tract infection, now presents to the emergency department with a one-day history of fever, flat atypical target lesions, and bullae that started on the chest and spread to the arms and face. There is blistering of the lips and conjunctiva as well. The extent of skin detachment is 8%. What is the most likely cause of the rash?

Choices:

1. Staphylococcal scalded skin syndrome
2. Mycoplasma-induced rash and mucositis
3. Toxic epidermal necrolysis
4. Stevens-Johnson syndrome

Moh'd Terbi

Answer: 4 - Stevens-Johnson syndrome

Explanations:

- Stevens-Johnson syndrome/toxic epidermal necrolysis (SJS/TEN) is historically more likely to be due to medication exposure and trimethoprim-sulfamethoxazole is a commonly cited cause.
- SJS/TEN manifests as a rash consisting of macules, purpura, diffuse erythema, atypical target lesions that are flat, and flaccid blisters. They are usually extensive in number and centrally located at the onset. The blisters then coalesce and spread to the face and limbs, with extensive mucous membrane involvement to two or more mucosal sites.
- The amount of skin detachment differentiates between SJS and TEN. SJS has less than 10% skin detachment. TEN requires at least 30% skin detachment. Skin involvement between 10% to 30% is classified as SJS/TEN overlap syndrome.
- SJS carries a high mortality risk and current guidelines recommend the transfer of affected patients to burn centers capable of treating the large areas of desquamation.

Mohit Tehri

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Research Concepts:

Stevens Johnson Syndrome




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improvement.

Moh'd Terbi

Question 190: A 6-year-old presents with a 5-day history of fever and rash. The rash resolved yesterday. His immunizations are up to date. On exam, he has a red, strawberry tongue with cracked lips, bilateral cervical lymph nodes, and bilateral conjunctival injection that does not seem to bother him. Additionally, the skin of the patient's fingertips is peeling. The patient is admitted to the hospital. What is the best treatment?

Choices:

1. 2 g/kg of IVIG with 5 mg/kg/day of aspirin
2. 1 g/kg of IVIG with 5 mg/kg/day of aspirin
3. 2 g/kg of IVIG with 100 mg/kg/day of aspirin
4. 1 g/kg of IVIG with 100 mg/kg/day of clopidogrel

Moh'd Terbi

Answer: 3 - 2 g/kg of IVIG with 100 mg/kg/day of aspirin

Explanations:

- The goal of treatment for Kawasaki disease is to minimize the risk of coronary artery anomalies. IVIG has been shown to decrease the incidence of coronary artery dilation to less than 3%.
- If given within the first 10 days of fever it can decrease the total duration of fever. The high-dose aspirin is used for the antiplatelet and anti-inflammatory properties.
- Aspirin is started at doses of 80 to100 mg/kg/day 4 times daily. The high dose aspirin should be continued until 48 to 72 hours after defervescence. Then lower dose aspirin (3 to 5 mg/kg/day) continues for 6 to 8 weeks or until platelet counts and erythrocyte sedimentation rate have returned to normal and there are no cardiac abnormalities on echocardiogram.
- If any coronary artery anomalies exist, the patient will need to be on aspirin or other antiplatelet medication indefinitely.

Mohd Terbi

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Research Concepts:

Kawasaki Disease




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Question 191: A 17-year-old male presents with epistaxis. It is described as a slow ooze from the right nostril. Yesterday, he went with some friends to a local freshwater pond where he went swimming and "mud wrestling." He experienced no trauma to the face, but did have some abrasions to his legs from branches and did have to remove some leeches. Physical exam, including anterior rhinoscopy, does not reveal a source of bleeding. However, a small amount of unclotted blood is noted coming from the right nare. What is the next step in management?

Choices:

1. Bilateral nasal packing
2. Genetic testing for Osler-Weber-Rendu disease
3. Nasal endoscopy
4. Oral tranexamic acid

Moh'd Terbi

Answer: 3 - Nasal endoscopy

Explanations:

- Leeches live in freshwater lakes and ponds. Swimming in these bodies of water can expose humans to leeches. They excrete an anesthetic when they bite, and might not be felt or detected.
- Leech saliva contains numerous substances including hirudine (a potent antithrombin), hyaluronidase, histamine-like vasodilator, and calin (a platelet aggregation inhibitor), all of which can contribute to bleeding.
- Leeches can infest human orifices, including the ears, nose, rectum, and vagina.
- If there is a concern for a nasal leech infestation, examination with anterior rhinoscope is not sufficient, and inspection with an endoscope is usually necessary.

Mohd Terbi

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Research Concepts:

Leech Bite




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Question 192: The delivery of a full-term newborn was complicated by prolapse of the umbilical cord. The baby was born non-vigorous and required intubation and resuscitation in the delivery room, after which he was immediately admitted to the neonatal intensive care unit for further management. A venous cord blood sample was drawn for analysis immediately after delivery from a doubly clamped segment. The pH was 7.23, with a base deficit of 5.5. Which of the following statements is most accurate regarding the interpretation of this cord blood gas?

Choices:

1. This cord blood gas is reassuring and rules out any fetal hypoxic injury
2. The arterial cord blood gas pH is expected to be also equal to 7.23
3. This venous cord blood gas cannot be interpreted alone; an arteriovenous pH difference is expected, with the arterial pH being much higher than 7.23
4. This venous cord blood gas cannot be interpreted alone; an arteriovenous pH difference is expected, with the arterial pH being much lower than 7.23

Mon'd Terb.

Answer: 4 - This venous cord blood gas cannot be interpreted alone; an arteriovenous pH difference is expected, with the arterial pH being much lower than 7.23

Explanations:

- It is always important to obtain both venous and arterial blood samplings for analysis.
- Umbilical cord compression is usually accompanied by an arteriovenous pH difference.
- In cases of umbilical cord compression (prolapse, for example), fetal tissues respond by increasing oxygen extraction and thus eliminating more carbon dioxide in the umbilical artery. Consequently, arterial cord blood is expected to be much more acidotic than venous blood.
- The umbilical venous acid-base status is usually less affected by cord compression since it remains somehow equilibrated by the normally functioning placenta.

Mohamed Terbi

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Research Concepts:

Cord Blood Gas




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Question 193: A 12-year-old male presents to his provider with a 2-month history of pain in his lower right thigh. He describes the pain as "achy" in character, moderate in severity, and persistent in duration. On physical examination, there is a palpable mass in the distal right thigh. He adds that it is tender. He also exhibits a limited range of motion at the knee. Radiographs of the lower extremity reveal an osseous lesion with a radiodense matrix and a "sunburst" appearance. Local soft tissue extension is apparent. Which organ is the most common site of spread of the most likely lesion in this patient with inadequate treatment?

Choices:

1. Liver
2. Brain
3. Lungs
4. Adrenal glands

Moh'd Terbi

Answer: 3 - Lungs

Explanations:

- Osteosarcoma is a lethal pediatric malignancy which most commonly occurs in the long bones of the lower extremity. Physical exam findings may include warmth and tenderness in the affected area, a palpable mass, and a limited range of motion when a joint is involved.
- The lungs are the most common site of extraosseous metastasis. CT imaging of the chest may reveal pulmonary nodules with density (measured in Hounsfield units) similar to that of bone due to the production of osteoid by the metastatic osteosarcoma cancer cells.
- The characteristic "sunburst" appearance of osteosarcoma seen on radiography is the result of aggressive periostitis.
- Extrapulmonary metastasis related to osteosarcoma is exceedingly rare.

Wahid Terbi

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Research Concepts:

Osteosarcoma




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Question 194: A 4-month-old infant presents to the emergency department with acute respiratory failure secondary to bronchiolitis caused by a respiratory syncytial virus (RSV) infection. The infant requires intubation and mechanical ventilation. You begin the process of intubation by assembling your staff, medication, equipment, and other resources. You ask the nurse to administer atropine to prevent bradycardia from direct laryngoscopy and then midazolam and fentanyl. You start bag-mask ventilation with 15 liters per minute oxygen. The vital signs are afebrile, heart rate 155 beats/min, respiratory rate 57, blood pressure 75/40 mmHg, and SpO2 95%. You ask the nurse to administer a paralytic. Shortly after that, the infant's SpO2 gradually declines and stays at 88%. There are no issues with your equipment, and you have attempted to reposition the airway. What should be the next step in airway management?

Choices:

Moh'd Terbi

1. Suction the airway
2. Reposition the airway again with a head-tilt/chin-lift maneuver
3. Perform a jaw thrust maneuver
4. Place a nasopharyngeal airway

Answer: 1 - Suction the airway

Explanations:

- Initial steps in airway management include airway positioning maneuvers, such as head-tilt/chin-lift or jaw-thrust, suctioning, supplemental oxygen, and repositioning of the airway if the previous steps are ineffective.
- Airway positioning maneuvers place the airway in a neutral position and help move the tongue and palatal tissues away from the posterior pharyngeal wall. When choosing an airway positioning maneuver, one must be cognizant of the possible presence or absence of a cervical spine injury.
- Suctioning assists with the removal of secretions that could be causing or contributing to airway obstruction.
- If these initial steps do not assist in maintaining a patent airway or in providing adequate ventilation/oxygenation, then an airway adjunct should be utilized.

Mem'd Terbi

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Research Concepts:

Oropharyngeal Airway




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Question 195: A 14-year-old female with a past medical history of cystic fibrosis presents for a routine outpatient visit. She was recently hospitalized one month ago for an acute illness. During that hospitalization, she was found to have a one-time fasting plasma glucose of 130 mg/dl. She reports baseline health without any symptoms of weight loss, polyuria, or polydipsia. Which of the following is the most appropriate next step in the management of this patient?

Choices:

1. Start a long-acting basal insulin
2. Start rapid-acting pre-meal insulin
3. Obtain a Hemoglobin A1c level
4. Obtain a 2 hour 75-gram oral glucose tolerance test

Moh'd Terbi

Answer: 4 - Obtain a 2 hour 75-gram oral glucose tolerance test

Explanations:

- A 2-hour 75 g oral glucose tolerance test is the only acceptable screening test for cystic fibrosis related-diabetes.
- At baseline health, the diagnosis of cystic fibrosis-related diabetes can be made with a 2-hour oral glucose tolerance plasma glucose level of greater than or equal to 200 mg/dl, fasting plasma glucose of greater than or equal to 126mg/dl, HgA1c level of greater than or equal to 6.5%, and/or random glucose greater than or equal to 200 mg/dl with clinical symptoms.
- To make the diagnosis of cystic fibrosis-related diabetes during an acute illness requires a 2-hour postprandial plasma glucose level greater than or equal to mg/dl or a fasting plasma glucose of greater than or equal to 126mg/dl that persist for 48 hours.
- HbA1c levels may be falsely low in individuals with cystic fibrosis, and a normal hemoglobin A1c level does not rule out cystic fibrosis-related diabetes.

Mohsen Terbi

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Research Concepts:

Cystic Fibrosis Related Diabetes




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Question 196: A 17-year-old male presents to the emergency department complaining of hours of headache, abdominal pain, nausea, vomiting, and lack of energy. The patient reports he has never felt this way before now. The patient has no past medical history, takes no medications, does not smoke, drink, or abuse illicit drugs. On physical exam, he is an ill-appearing, thin male that is breathing rapidly with generalized abdominal tenderness to palpation without rebound or guarding. Point of care glucose results at 685 mg/dL and a venous blood gas demonstrates a pH of 7.2 with an anion gap of 30 mEq/L. The intern assigned to the case orders an insulin drip at a dose of 0.1 units/kg. He also initiates crystalloid fluids and administers 4 liters of normal saline over the next few hours. After being admitted to the hospital and receiving continued treatment, the patient's anion gap has closed, but he remains acidotic. What is the most likely iatrogenic cause of his persistent acidosis?

Moh'd Terkh

Choices:

1. Insufficient treatment of diabetic ketoacidosis
2. Medication error
3. Hyperchloremic metabolic acidosis induced by large volumes of normal saline
4. Hypoventilation secondary to a developing pneumonia

Answer: 3 - Hyperchloremic metabolic acidosis induced by large volumes of normal saline

Explanations:

- This patient received a large volume of normal saline in the emergency department. Large volumes of this unbalanced crystalloid can induce a hyperchloremic state, leading to non-anion gap metabolic acidosis.
- Balanced solutions, such as lactated Ringer's, would be a superior choice of crystalloid fluid. The lactate found in this solution is rapidly metabolized to bicarbonate by the liver. Additionally, it contains a near-physiologic concentration of ions such as chloride.
- Normal saline, when administered in small quantities is unlikely to have any adverse effect such as hyperchloremic metabolic acidosis. This phenomenon only occurs when large volumes have been administered.
- This patient presents with a classic presentation of undiagnosed type 1 diabetes in diabetic ketoacidosis. Hallmarks of this condition are abdominal pain, nausea, vomiting, lack of energy, malaise, and an anion gap metabolic acidosis.

Moh'd Terkh

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Research Concepts:

Crystalloid Fluids



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Moh'd Terbi

Question 197: A previously healthy 1-year-old child is brought in by his mother for a rash and a fever of 102 F. The rash is red, painful, and started to blister today. The child has not been on any medications and appears dehydrated. The presumed diagnosis is Staphylococcus scalded skin syndrome. What can the mother be told regarding the prognosis of this disease in children?

Choices:

1. Mortality in children is greater than 50%, and in survivors, skin desquamation generally results in significant scarring
2. Mortality in children is less than 5%, and the skin desquamation generally resolves within two weeks
3. Mortality in children is greater than 50%, but in survivors, skin desquamation generally resolves within two weeks
4. Mortality in children is less than 5% and the skin desquamation generally resolves in 3 to 6 months

Mom'd Terbi

Answer: 2 - Mortality in children is less than 5%, and the skin desquamation generally resolves within two weeks

Explanations:

- Staph scalded skin syndrome is characterized by denudation of the skin caused by toxin-producing Staphylococcus species.
- Mortality in children is less than 5%. While in adults and especially those with immunosuppression it is much higher, greater than 50% in one study.
- Staph scalded skin initially presents with fever, irritability, and malaise, and within 24 to 48 hours a rash begins to develop. It typically starts on the face and flexures. Flaccid blisters and desquamation develop, and Nikolsky sign is present.
- Treatment of Staph scalded skin syndrome is with anti-staphylococcal antibiotics such as nafcillin or oxacillin. Vancomycin should be administered if MRSA is suspected.

Mon'd Terbi

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Research Concepts:

Staphylococcal Scalded Skin Syndrome




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Question 198: A 6-year-old girl who has received all of her routine childhood immunizations presents with a hoarse voice and brassy cough. She was diagnosed with a viral upper respiratory infection several days ago. Her temperature is 103 F (39.5 C), and she is mildly tachycardic with normal blood pressure and oxygen saturation of 98% on room air. Physical exam shows a child leaning forward with mild drooling, inspiratory stridor, and clear lung sounds. White blood cell count from peripheral blood is 22000 cells/mm3, with 69% neutrophils and 20% bands. A lateral neck x-ray demonstrates a steeple sign with tracheal lining irregularities. Given the likely diagnosis, which of the following is the most common etiology of this child's condition?

Choices:

1. Respiratory syncytial virus
2. Staphylococcus aureus
3. Streptococcus pyogenes
4. Haemophilus influenzae-type B

Mohid Terbi

Answer: 2 - Staphylococcus aureus

Explanations:

- A brassy cough most likely indicates bacterial tracheitis. A barky cough indicates croup. However, croup can precede bacterial tracheitis.
- Bacterial tracheitis is most commonly caused by Staphylococcus aureus.
- Streptococcus pneumonia is the most common cause of acute ear infections in children.
- Epiglottitis will demonstrate a thumbprint sign rather than a steeple sign on a lateral neck x-ray. This is predominantly due to Haemophilus influenzae type B. A fully immunized child should not be at risk for this pathogen.

Mohd Terbi

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Research Concepts:

Bacterial Tracheitis




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Question 199: A 17-year old female from Connecticut presents with a 7-day history of fever and chills. In the last 48 hours, she has also developed malaise, anorexia, and muscle pain. Her physical exam is unremarkable except for a few petechiae. She was hiking in the woods recently, where there were many ticks and insects. Testing for Lyme disease is negative, but the infectious disease expert feels that she may have been bitten by the deer tick "Ixodes dammini." Which other disease, besides Lyme, can be caused by this same tick?

Choices:

1. Babesiosis
2. Rocky mountain spotted fever
3. Typhoid fever
4. Q-fever

Moh'd Terbi

Answer: 1 - Babesiosis

Explanations:

- Babesiosis is a zoonotic infection transmitted by the deer tick, Ixodes dammini.
- The Ixodes tick is much smaller than the tick that causes Rocky Mountain Spotted Fever.
- Babesiosis also occurs in the same geographical location as Lyme disease.
- It is often mistaken for malaria and somewhat difficult to diagnose. This is because the infection has no specific signs or symptoms.

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Moh'd Terbi

Research Concepts:

Babesiosis




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Question 200: A concerned mother brings her 4-year-old son to the hospital. She says she noticed that his eyes look yellow. The patient's vitals are within normal limits. The mother states that his urine has been dark for the last few days, but that he has been eating and drinking normally and has not had any other complaints. Labs show that total bilirubin is 3.4 mg/dL, aspartate transaminase (AST) is 17 U/L, alanine transaminase (ALT) is 15 U/L, and alkaline phosphatase (ALP) is 40 U/L. What is the next best step in management?

Choices:

1. Computed tomography (CT) scan abdomen
2. Reassurance
3. Urine complete examination
4. Right upper quadrant ultrasound

Moh'd Terbi

Answer: 4 - Right upper quadrant ultrasound

Explanations:

- A right upper quadrant ultrasound is an inexpensive and quick way to rule out any life-threatening causes of elevated liver function tests.
- It is important to determine if the abnormal labs are due to benign or serious causes.
- Rotor syndrome is a benign and self-limiting disease.
- A liver biopsy will show normal histology in Rotor syndrome.

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Research Concepts:

Moh'd Terbi

Rotor Syndrome




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Section 3

Question 201: A 9-year-old male patient with jaundice and severe pruritus, with history of a murmur, comes to the clinic for an evaluation. Physical examination reveals a posterior embryotoxon, a harsh systolic murmur best heard on the left lower sternal border as well as skin xanthomas. What is the most frequent cardiac condition associated with the diagnosis?

Choices:

1. Ventricular septal defect
2. Atrial septal defect
3. Aortic stenosis
4. Peripheral pulmonic stenosis

Moh'd Terbi

Answer: 4 - Peripheral pulmonic stenosis

Explanations:

- The patient has Alagille syndrome (ALGS). He has three of the major clinical features of Alagille syndrome, signs, and symptoms of cholestasis, and skin xanthomas. Physical examination reveals ophthalmological findings of posterior embryotoxon and a heart murmur.
- Peripheral pulmonic stenosis is the most frequent cardiac condition found with this syndrome, present in 67% of affected patients.
- The second most common is tetralogy of Fallot (16%), other common associated cardiac defects are ventricular septal defect, atrial septal defect, and aortic stenosis.
- Cardiac defects are reported in greater than 90% of patients with ALGS.

Moh'd Terbi

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Research Concepts:

Alagille Syndrome




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Question 202: A pregnant mother was admitted to the labor unit at 29 weeks gestational age with a rupture of membranes for more than 24 hours duration. Fetal heart rate was 160/min. Amniotic fluid was found to be meconium stained. The mother also had a fever with a temperature of 38 C. An emergency C-section was done, and a preterm baby boy was delivered. The baby appears to be floppy, with poor respiratory efforts. The neonatal team resuscitates him with endotracheal intubation and positive pressure ventilation. He is admitted to the neonatal intensive care unit. Complete blood counts reveals hemoglobin of 17 g/dL, a total leukocyte count of 20,000 cells/microL (neutrophils 80%, lymphocytes 18%, and monocytes 2%), platelets of 100,000/microL. C- reactive protein is 3 mg/dL. A chest x-ray shows bilateral reticulonodular opacities. Which of the following is the most likely etiology for the presentation of this newborn?

Choices:

Moh'd Terbi

1. Listeria infection
2. Ventricular septal defect
3. Gastroesophageal reflux
4. Transient tachypnea of the newborn

Answer: 1 - Listeria infection

Explanations:

- Meconium is the initial substance present in the intestines of the developing fetus and constitutes the first bowel movement of the newborn. Meconium can be green, brown, or yellow.
- Term healthy neonates pass meconium between 24 to 48 hours following birth. Preterm infants typically exhibit delayed passage.
- In-utero passage of meconium may indicate normal gastrointestinal maturation (post-term babies), or more concerningly, it may be a sign of acute or chronic fetal hypoxia or chorioamnionitis.
- In-utero passage of meconium before 34 weeks of gestation is rare, and in preterm babies, meconium-stained amniotic fluid may indicate chorioamnionitis, fetal sepsis (e.g., listeriosis), or in-utero cord compression.

Moh'd Terbi

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Research Concepts:

Meconium




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Question 203: A 17-year-old male presents to the emergency department in Arizona with vomiting, dyspnea, fever, and generalized myalgias. The vital signs demonstrate fever, tachypnea, tachycardia, and mild hypoxia. The patient is found to have thrombocytopenia, metamyelocytes, leukocytosis, and bilateral pulmonary infiltrates on chest x-ray. Which organism is the most likely etiology?

Choices:

1. Influenza A
2. Hantavirus
3. Human immunodeficiency virus (HIV)
4. Pneumocystis jiroveci

Moh'd Terbi

Answer: 2 - Hantavirus

Explanations:

- Hantavirus presenting as cardiopulmonary syndrome, such as in this patient, is common in the Southwestern United States. Thrombocytopenia is the most common significant laboratory abnormality on presentation when patients are reaching admission criteria. Metamyelocytes may also be seen in the setting of significant leukocytosis.
- Bilateral infiltrates seen on the chest x-ray may have an acute respiratory distress syndrome appearance due to the fluffy nature due to increased capillary permeability.
- Hantavirus often presents with fever, chills, diarrhea, malaise, and dyspnea.
- Hantavirus is predominantly acquired through aerosolization of rodent urine and droppings.

Moh'd Terbi

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Research Concepts:

Hantavirus Syndrome




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Question 204: A 6-year-old girl presents for a physical exam. She was recently adopted from Nigeria by a family in the United States. In Nigeria, she received three doses of the oral polio vaccine (OPV) as recommended and is due for her fourth dose to complete the series. The parents are concerned that only the inactivated polio vaccine (IPV) is available in the United States. They ask if they should wait for her to receive the OPV when they visit Nigeria in three months. What is the most appropriate recommendation for the polio vaccination series for this child?

Choices:

1. Restart the polio vaccine series using the IPV for a total of four doses
2. Complete the polio vaccine series by administering the fourth dose using the IPV
3. Wait for her to receive the OPV when visiting Nigeria in three months
4. Do not administer the last dose of polio vaccine because the patient is already six years of age

Moh'd Terbi

Answer: 2 - Complete the polio vaccine series by administering the fourth dose using the IPV

Explanations:

- Only the injectable inactivated polio vaccine (IPV) is administered in the United States. The oral polio vaccine (OPV) is used in some other parts of the world. Both series are considered complete after four doses.
- The four-dose polio series can be comprised of any combination of IPV and OPV. In this case, the child should receive an IPV dose to complete the series.
- The first three doses of the polio vaccine should be separated by at least four weeks. The fourth dose should be given at least six months after the third dose.
- Sometimes children receive a fifth dose of the IPV vaccine as part of a combination vaccine while receiving other immunizations. This is considered safe. In cases where documentation of polio immunization is questionable, the series should be restarted. The fourth dose should be given when the child is four years or older as long as it is six months after the third dose.

Mehri Tehrani

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Research Concepts:

Polio Vaccine



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Moh'd Terbi

Question 205: A 5-year-old male is brought in with facial puffiness. On examination, it is noted that there are many insect bite marks on his skin, some of which are infected. His father reveals that these are bed bug bites. The patient further describes that his urine has become frothy. What is the next step in management?

Choices:

1. Topical antibiotic for the skin infection
2. Complete blood count and electron spin resonance
3. Urinalysis
4. Renal ultrasound

Moh'd Terbi

Answer: 3 - Urinalysis

Explanations:

- The urinalysis may detect red blood cells and red blood cell casts, making the diagnosis of post-streptococcal glomerulonephritis (PSGN).
- The skin infection is most likely is secondary to a nephritogenic strain of streptococcus.
- Oral antibiotics should be given but may not affect glomerulonephritis.
- Steroids may be given as there is some evidence they may help PSGN.

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Moh'd Terbi

Research Concepts:

Poststreptococcal Glomerulonephritis




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Question 206: A 17-year-old female is brought to the emergency department by emergency medical services. She is too delirious to give a history but alert enough to complain of stomach pain. She is noted to be hypotensive and tachycardic. She is afebrile. Her exam is unremarkable except for dry mucous membranes. Intravenous fluids are started. Serum chemistry shows that the potassium is elevated and sodium is decreased. Blood glucose is borderline decreased. The electrolytes are otherwise within normal limits. A CBC is unremarkable. After 3 liters of fluids, the patient is still hypotensive. What is the definitive treatment for this patient's condition?

Choices:

1. Vasopressors and broad-spectrum antibiotics
2. Insulin drip
3. Vasopressors and corticosteroids
4. CT abdomen and pelvis

Moh'd Terbi

Answer: 3 - Vasopressors and corticosteroids

Explanations:

- This presentation, lab abnormalities, and hypotension unresponsive to fluid resuscitation are most consistent with an acute adrenal crisis. The definitive treatment for adrenal crisis is fluids and corticosteroids.
- An insulin drip would be indicated in a patient with diabetic ketoacidosis (DKA). A patient in DKA would be expected to have elevated potassium and decreased sodium, but the glucose would most likely be elevated. Additionally, sodium bicarbonate would be low in DKA.
- Vasopressors and broad-spectrum antibiotics would be indicated in a septic patient. While this patient is hypotensive and tachycardic, she was afebrile and did not have leukocytosis.
- The patient had altered mental status and complained of abdominal pain. While it would be reasonable to consider getting a CT of the abdomen and pelvis, it would not be the definitive treatment for the underlying condition.

Mehdi Tarhi

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Research Concepts:

Adrenal Crisis




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Question 207: A 4-year-old boy is brought in by mother for an asymptomatic rash. The mother states she first noted asymptomatic red, scaly rash on palms and soles about 6 months. Today she is more concerned because rash seems to be spreading now involving face, chest, back, and extremities. The mother denies recent illness, new medications or significant family history. On exam, there are well demarcated, red-orange plaques with prominent follicular keratotic papules with distinct "islands of sparing" involving the face, trunk, and extremities and red-orange waxy palmoplantar keratoderma. What is the most likely diagnosis?

Choices:

1. Allergic contact dermatitis
2. Eczema herpeticum
3. Psoriasis
4. Classical juvenile pityriasis rubra pilaris

Moh'd Terbi

Answer: 4 - Classical juvenile pityriasis rubra pilaris

Explanations:

- There are 6 subtypes of pityriasis rubra pilaris.
- The 3 subtypes affecting children include type 3 classical juvenile onset, type 4 circumscribed juvenile onset, and type 5 atypical juvenile onset.
- Type 3 classic juvenile pityriasis rubra pilaris presents similarly to type 1 including classic findings of red-orange papules and plaques with islands of sparing; perifollicular keratotic papules, and waxy palmoplantar keratoderma.
- Like type 1 in adults, the majority of these patients clear within 3 years.

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Moh'd Terbi

Research Concepts:

Pityriasis Rubra Pilaris




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Question 208: A 17-year-old male was hiking when he tripped and fell on his side, landing on the lateral aspect of his left shoulder, where there is a minor abrasion. He is able to abduct, extend, and flex at the shoulder but is limited by pain. He reports a painful lump on the top of the shoulder at the lateral aspect of the clavicle. His radial pulse is 2+, and his sensation to light touch is intact. Which of the following is the most likely diagnosis?

Choices:

1. Fracture of the clavicle
2. Shoulder dislocation
3. Acromioclavicular joint sprain
4. Tear of the rotator cuff

Moh'd Terbi

Answer: 3 - Acromioclavicular joint sprain

Explanations:

- The mechanism of injury, location of pain and swelling, and degree of symptoms make clavicle fracture less likely. Clavicle fractures more frequently require greater trauma, and symptoms will be at the location of the fracture along the clavicle, not the acromioclavicular (AC) joint.
- His intact but painful range of motion makes a should dislocation less likely. Shoulder dislocations will have a visible deformity compared to the contralateral shoulder and have a diminished range of motion.
- AC joint sprain is the most likely explanation given the mechanism of injury and exam. Patients with AC joint injury usually present with pain and swelling around the shoulder.
- Based on his mechanism of injury and physical exam, a rotator cuff tear is less likely than an AC joint sprain. Rotator cuff tear is uncommon in younger patients and requires a significant force with the arm, usually in some degree of external rotation and abduction. This is not consistent with this patient's mechanism of injury.

Mona Terbi

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Research Concepts:

Acromioclavicular Joint Injury



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Moh'd Terbi

Question 209: A 16-year-old is seen in the emergency department with a hoarse voice and dysphagia. His symptoms started 12 hours ago and have progressed. He has a fever and appears ill. He is unable to speak, and thus the mother provides the history. The tonsils are 4+/4 enlarged with grey exudates. There is bilateral cervical adenopathy. While waiting for the patient to be seen by an ENT surgeon, what is the most urgent study that should be ordered for this child?

Choices:

1. Blood culture
2. Lateral neck x-ray
3. Throat swab
4. Arterial blood gas

Moh'd Terbi

Answer: 2 - Lateral neck x-ray

Explanations:

- The treatment of routine tonsillitis, which is mild, is usually pain control and antibiotics (macrolides or amoxicillin). For recurrent tonsillitis, tonsillectomy is recommended.
- The one imaging study sometimes performed in patients with enlarged tonsils is the lateral neck x-ray.
- The lateral neck x-ray will reveal the degree of airway obstruction.
- When the airway obstruction is severe, the patient should be admitted, and a tracheostomy set must be available at the bedside.

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Moh'd Terbi

Research Concepts:

Tonsillitis




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Question 210: An infant with eczema is being tested for peanut allergy with the skin prick test. According to recent guidelines, at what wheal diameter should the infant be administered 2 gram of peanut protein?

Choices:

1. 2 mm
2. 5 mm
3. 20 mm
4. Any diameter as long as it is not raised

Moh'd Terbi

Answer: 1 - 2 mm

Explanations:

- In any infant in whom a skin prick test for peanut allergy generates a wheal of 2 mm or smaller compared to a control, then the first dose of 2 g of peanut protein can be introduced.
- If the infant has a skin prick test which generates a wheal of 3 mm or greater, refer the infant to an allergic specialist.
- Infants with mild to moderate eczema should be introduced age appropriate peanut protein at 4 to 6 months.
- For infants without any peanut allergy or eczema, they can have peanut protein foods ad lib.

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Moh'd Terbi

Research Concepts:

Peanut Allergy




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Question 211: A medical response team is working after an earthquake in Haiti. A 3-month-old boy with severe rice-water diarrhea without vomiting is evaluated. After starting adequate rehydration therapy, what is the correct management?

Choices:

1. Stop oral rehydration therapy once breastfeeding adequately
2. Continue breastfeeding and oral rehydration therapy
3. Start loperamide and zinc supplements
4. Give a single dose of ciprofloxacin 20 mg/kg ASAP

Moh'd Terbi

Answer: 2 - Continue breastfeeding and oral rehydration therapy

Explanations:

- Vibrio cholera outbreaks are most common in places with poor water, sanitation, and hygiene infrastructure that are struck with natural disasters, war, and conflict.
- In children, severe cholera is highlighted by excretion of up to 20 mL/kg/hour of stool.
- Treatment of infants consists of aggressive rehydration with the caveat that breastfeeding can be continued during therapy.
- Antibiotics of choice for cholera are tetracyclines and macrolides. Fluoroquinolones may be effective in adults but are not recommended for pregnant women and children less than eight years old.

Mohd Terbi

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Research Concepts:

Vibrio Cholerae




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Question 212: A patient is being admitted to the hospital for further evaluation due to concern for Hantavirus pulmonary syndrome after presenting with dyspnea, vomiting, and fever. What laboratory abnormality is most significant on presentation demonstrating the need for admission?

Choices:

1. Thrombocytopenia
2. Hypernatremia
3. Hypokalemia
4. Leukocytosis

Moh'd Terbi

Answer: 1 - Thrombocytopenia

Explanations:

- Thrombocytopenia is often present at the stage of disease requiring admission for further observation. This often precedes the descent into pulmonary failure by a couple of days.
- Hyponatremia is more common than hypernatremia in Hantavirus pulmonary syndrome.
- Potassium is not normally greatly affected in the early stages of Hantavirus pulmonary syndrome.
- Atypical lymphocytes and premature white blood cells may be present on admission, but leukocytosis alone is not significant enough to warrant admission.

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Moh'd Terbi

Research Concepts:

Hantavirus Syndrome




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Question 213: A 17-year-old male with leukemia presents to the emergency room with four days of vomiting and voluminous diarrhea. He has had several episodes per day. He has also had reduced oral intake but denies fever or any additional symptomatology. Serum chemistry reveals a sodium level of 145 mmol/L, a potassium level of 1.4 mmol/L, a chloride level of 90 mmol/L, a bicarbonate level of 20 mmol/L, and a magnesium level of 1.9 mg/dL. The physical exam does not reveal any significant findings, and his ECG is normal. What is the next step in management?

Choices:

1. Administer potassium chloride of 40 mEq orally every 3 to 4 hours for 3 doses
2. Administer magnesium sulfate 1 gram IV over 1 to 2 hours
3. Prescribe spironolactone 25 mg orally every 8 hours
4. Administer potassium chloride of 40 mEq intravenously every 3 to 4 hours for 3 doses

Med'd Terbi

Answer: 4 - Administer potassium chloride of 40 mEq intravenously every 3 to 4 hours for 3 doses

Explanations:

- Rapid replacement therapy is warranted with severe hypokalemia or when clinical symptoms are present. Potassium chloride of 40 mmol given every 3 to 4 hours for 3 doses is preferred.
- Rapid correction can be provided via oral and IV formulation. Oral supplementation is preferred because it is associated with a lower risk of rebound hyperkalemia. However, intravenous (IV) repletion is administered if oral therapy is not tolerated. IV administration is also preferred in the setting of cardiac dysrhythmias, digitalis toxicity, and recent or ongoing cardiac ischemia.
- A potassium-sparing diuretic should be considered when the etiology of hypokalemia involves renal potassium wasting as potassium replacement therapy alone may not suffice.
- Pain and phlebitis usually occur with peripheral IV infusions when infusion rates exceed 10 mEq/hour. There is also a risk of rebound hyperkalemia when rates exceed a dose of 20 mEq/hour. Careful monitoring of serum potassium levels is required as the development of hyperkalemia is common in hospitalized patients.

Meni's Tech

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Research Concepts:

Hypokalemia

StatPearls Knowledge Base

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Moh'd Terbi

Question 214: A 9-year-old male presents with a rash and hair loss. The mother reports they have tried over-the-counter terbinafine cream with only temporary improvement. There have been no other symptoms. The exam shows a 2 x 1-centimeter area of hair loss, scaling, hairs broken off, and several pustules. Occipital, nontender lymph nodes are noted along with several erythematous, well-demarcated plaques on the trunk. What is the best treatment?

Choices:

1. Topical nystatin
2. Oral griseofulvin
3. Oral amoxicillin/clavulanate
4. Ketoconazole shampoo

Moh'd Terbi

Answer: 2 - Oral griseofulvin

Explanations:

- The patient has tinea capitis that requires oral antifungal medication.
- Griseofulvin for 6 to 8 weeks is the drug of choice, but terbinafine, fluconazole, and itraconazole are also effective and have shorter courses.
- Liver functions should be monitored if treatment extends beyond 8 weeks.
- Secondary bacterial infections may require antibiotics.

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Moh'd Terbi

Research Concepts:

Tinea Capitis




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Question 215: A 16-year-old boy is hospitalized in an observation unit secondary to an anaphylactic reaction after getting stung by a yellow jacket. Before arriving at the hospital, his friend administered epinephrine after noticing excessive sweating, facial swelling, lightheadedness, and difficulty breathing. Subsequently, he was transported to the emergency department. During hospitalization, he did not develop any further reaction, and his symptoms resolved. He already has an epinephrine auto-injector. Which of the following is the next best step in the management of this patient?

Choices:

1. Allergy testing and immunotherapy
2. Oral prednisone for one week
3. Pulmonary function tests
4. As needed albuterol

Moh'd Terbi

Answer: 1 - Allergy testing and immunotherapy

Explanations:

- Patients with anaphylaxis to Hymenoptera should be referred to an allergist because immunotherapy for Hymenoptera can reduce the recurrence dramatically.
- Epinephrine is given 1:1000 0.2-0.5 cc IM.
- Specific IgE is the most important test before starting immunotherapy. Clinical signs and symptoms along with positive specific IgE indicate the use of immunotherapy.
- Desensitization/immunotherapy is a method to bring about a temporary state of tolerance to an agent responsible for an allergic and/or hypersensitivity reaction.

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Moh'd Terbi

Research Concepts:

Allergy Immunotherapy




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Question 216: A 3-year-old male is brought in with a five-day history of a sore throat and fevers. He has an erythematous patchy macular rash on the trunk and extremities, bilateral conjunctivitis, a strawberry tongue, dry and cracked lips, peeling of the fingers, and cervical lymphadenopathy. A systolic murmur is graded two out of six. There is leukocytosis with mostly neutrophils and thrombocytosis. Select the most probable diagnosis.

Choices:

1. Rheumatic fever
2. Kawasaki disease
3. Lyme disease
4. Infectious mononucleosis

Moh'd Terbi

Answer: 2 - Kawasaki disease

Explanations:

- The patient has a typical presentation for Kawasaki disease. Criteria must include fever for over five days and 4 of 5 clinical criteria. Warm CREAM is a mnemonic to remember KD: Warm=fever over five days, C=conjunctivitis, bilateral and nonpurulent; R=rash; E=extremity edema and erythema of hands and feet with later peeling; A=adenopathy, typically cervical, greater than 1.5 cm; M=mucosal, strawberry tongue, red, cracked lips.
- The etiology of this condition is not known, but treatment is with high-dose intravenous immunoglobulin (IVIG) and aspirin.
- Kawasaki disease is thought to trigger a part of the innate immune system that activates the inflammation cascade leading to vasculitis of medium and small vessels and vascular remodeling resulting in coronary artery aneurysms (CAA). Echocardiography is necessary to assess and follow CAA.
- Mononucleosis shares characteristics with Kawasaki disease such as fever, fatigue, and generalized lymphadenopathy.

Mich's Tests

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Research Concepts:

Kawasaki Disease




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improvement.

Moh'd Terbi

Question 217: A 9-year-old boy is brought to the office by his mother as he has become “unmanageable,” does not listen to his mother, argues with her about getting ready for school, and doesn't do anything that he's told including homework and chores over the past two years. He makes excuses that he “forgot.” He often makes careless mistakes while rushing through his homework. He recently was taken to the principal’s office for getting out of his seat and talking out of turn. The patient teachers like him but describe him as “difficult to teach.” The patient has lost friends due to his behavior. The boy's weight is in the 40th percentile, his overall development has been normal, and he has met all developmental milestones. The family moved to a new neighborhood, and the patient started attending a different school last year. There is a family history of bipolar disorder in the patient’s uncle. During the course of the evaluation, the boy repeatedly interrupts the discussion with rapid, loud speech. He jumps up and grabs the physician’s stethoscope even after his mother tells him not to touch anything. Which of the following is the most likely diagnosis in this patient?

Mohsen Terbi

Choices:

1. Adjustment disorder with disturbance of conduct
2. Attention deficit hyperactivity disorder
3. Conduct disorder
4. Oppositional defiant disorder

Answer: 2 - Attention deficit hyperactivity disorder

Explanations:

- Clinical features of attention deficit hyperactivity disorder (ADHD) include Inattentive hyperactive or impulsive symptoms for more than 6 months.
- Several symptoms should be present before age 12. Symptoms occur in at least two setting such as home, and school and cause functional impairment.
- Treatment is with stimulants such as amphetamine and methylphenidate or non-stimulant such as atomoxetine and alpha-2 adrenergic agonists with behavioral therapy.
- In addition to academic difficulty, ADHD often results in impaired family and peer relationships.

Mahdi Terbi

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Research Concepts:

Dextroamphetamine-Amphetamine




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Question 218: A 3-year-old boy presents with a rash that has been present for over a year but has worsened over the past few days. His mother states her son picks and scratches constantly. Many over-the-counter treatments have been used with intermittent success. Physical examination shows diffusely dry, excoriated skin. Erythema surrounds several areas of erosions, fissures, and crusty yellow exudates, particularly in the antecubital and popliteal fossae. The inguinal and axillary lymph nodes are enlarged bilaterally. What is the most appropriate treatment?

Choices:

1. Oral cephalexin
2. Topical pimecrolimus
3. Topical mupirocin
4. Oral prednisolone

Moh'd Terbi

Answer: 1 - Oral cephalexin

Explanations:

- This child has atopic dermatitis with a secondary bacterial infection. Signs of bacterial superinfection include pustules, weeping skin, honey-colored crusting, and general worsening of baseline dermatitis.
- Staphylococcus aureus is the most frequent cause of infection in patients with atopic dermatitis. Mild, localized superinfection may be treated with topical antibiotics, but more widespread infections require an oral antibiotic. Superinfected atopic dermatitis does not respond to treatment with emollients or topical steroids.
- There is some evidence for the use of dilute bleach baths to decrease skin colonization with S. aureus in patients with atopic dermatitis. While bleach baths are unlikely to affect acute flares of atopic dermatitis, decreasing bacterial colonization may decrease the frequency and severity of superinfection-related exacerbations.
- Oral corticosteroids are occasionally used to treat acute exacerbations of atopic dermatitis in adolescents and adults, but they are generally not recommended for managing exacerbations in young children. Topical calcineurin inhibitors such as tacrolimus and pimecrolimus are alternatives to topical corticosteroids for patients with mild to moderate atopic dermatitis. They are typically utilized to treat atopic dermatitis on the face, neck, and skin folds.

Wafa Terbi

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Research Concepts:

Eczema

StatPearls Knowledge Base

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Moh'd Terbi

Question 219: A patient presents with diminished vision at night, xerophthalmia, keratomalacia, and follicular hyperkeratosis. What vitamin deficiency would cause these symptoms?

Choices:

1. Vitamin C
2. Vitamin K
3. Vitamin B
4. Vitamin A

Moh'd Terbi

Answer: 4 - Vitamin A

Explanations:

- Vitamin A deficiency is rare but can present with night blindness as the initial symptom.
- Night blindness often is associated with loss of goblet cells in conjunctiva and keratomalacia.
- Vitamin A deficiency affects approximately one-third of children under the age of five. It is estimated to claim the lives of nearly a million children under age five annually worldwide. Approximately 250,000 to 500,000 children in developing countries go blind each year due to vitamin A deficiency. It is the leading cause of preventable childhood blindness. Deficiency increases the risk of death from common childhood conditions such as diarrhea.
- The function of retinal is as a visual chromophore. An early manifestation of vitamin A deficiency is impaired vision, known as night blindness. Some other ocular changes include the following: xerophthalmia, dryness of the conjunctiva (xerosis), build-up of keratin debris in small opaque plaques (Bitot spots), and, eventually, roughening of the corneal surface with softening and destruction of the cornea (keratomalacia) which results in blindness. Other changes include impaired immunity, hyperkeratosis, keratosis pilaris, and squamous metaplasia of the epithelium lining the upper respiratory passages and urinary bladder to a keratinized epithelium. A deficiency in vitamin A may lead to enamel hypoplasia.

Mona Terbi

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Research Concepts:

Vitamin A Deficiency




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Moh'd Terbi

Question 220: A 17-year-old female presents with a two-month history of a non-healing 2.5 cm ulceration on the gingiva below the anterior teeth. Her past medical history includes Crohn disease, for which she takes adalimumab. On examination, the ulcer is surrounded by an erythematous halo and covered by a white-gray membrane. The ulcer did not resolve with topical tetracycline. What is the most appropriate next step in management?

Choices:

1. Systemic steroids
2. Topical benzocaine
3. Bland rinses
4. Consult with the treating physician regarding control of Crohn disease

Moh'd Terbi

Answer: 1 - Systemic steroids

Explanations:

- Severe, persistent aphthous stomatitis (AS), especially major aphthous ulcers, typically require systemic treatment, such as oral corticosteroids or immunomodulatory agents.
- Topical agents such as benzocaine and sucralfate can minimize the pain of aphthous stomatitis and allow oral intake.
- Chlorhexidine mouthwash is indicated to prevent superinfection. Topical tetracycline and steroid rinses can be helpful in some cases.
- Major and minor aphthous ulcers are similar, but major ulcers are more than 10 millimeters in diameter, and the ulceration is deeper.

Mohd Terbi

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Research Concepts:

Aphthous Stomatitis




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Question 221: A 3-year-old patient is brought in with high fever, crying, salivation, and refusal to eat and drink for 4 days. The child has been previously healthy and attends daycare. The exam is remarkable for clusters of small vesicles on the tongue, gums, and lips. The posterior pharynx is spared, and there is no cervical lymphadenopathy. There are no other physical findings. What is the most likely diagnosis?

Choices:

1. Hand, foot, and mouth disease
2. Ludwig angina
3. Diphtheria
4. Herpetic gingivostomatitis

Moh'd Terbi

Answer: 4 - Herpetic gingivostomatitis

Explanations:

- Symptoms of primary oral herpes are of sudden onset with fever, drooling, and refusal to eat.
- The lack of lesions on the hands and feet makes Coxsackievirus unlikely. Hand, foot, and mouth disease is most commonly caused by coxsackievirus.
- Ludwig angina is a cellulitis of the floor of the mouth and would present with bilateral lower facial edema.
- Diphtheria is rare because there is a vaccine. It presents with mandibular swelling and grey-white patches in the mouth.

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Moh'd Terbi

Research Concepts:

Herpetic Gingivostomatitis




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Question 222: A 3-year-old male presents to the pediatric for a week of fever, non-pruritic rash, cracked lips, and red eyes per his mother. The fever has been minimally responsive to acetaminophen. His provider orders an echocardiogram to rule out a diagnosis on the differential. What are the coronary vessels most likely affected by this disease?

Choices:

1. Left anterior descending and right coronary artery
2. Left circumflex artery
3. Posterior descending artery
4. Left and right marginal arteries

Moh'd Terbi

Answer: 1 - Left anterior descending and right coronary artery

Explanations:

- This child has Kawasaki disease which has been shown to most commonly affect the left anterior descending and right coronary artery
- Echocardiogram is the imaging modality of choice if there is any suspicion for Kawasaki disease to rule out coronary artery aneurysm.
- Patients with Kawasaki Disease can also have ECG changes including prolonged PR interval, deep Q waves, low voltage, ST-T changes, and arrhythmias.
- CTA and MRA can also be used to evaluate the coronary arteries in patients with Kawasaki disease.

Mohd Terbi

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Research Concepts:

Kawasaki Disease




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Question 223: A 6-year-old male patient presents to the clinic for the evaluation of snoring for the past year. The patient's father states that he often hears the patient snoring loudly with occasional gasps while sleeping. He states that his son is a "mouth breather" who always seems to have a "stuffy nose." On physical exam, the patient is afebrile and has 3+ tonsils without erythema or exudates. What is the best treatment option for this patient's condition?

Choices:

1. Tonsillectomy and adenoidectomy
2. Amoxicillin for a 10-day course
3. Continuous positive airway pressure (CPAP) at nighttime
4. Preferential sleeping position on the patient's side

Moh'd Terbi

Answer: 1 - Tonsillectomy and adenoidectomy

Explanations:

- Tonsillectomy and adenoidectomy is an effective first-line treatment option for sleep-disordered breathing in children.
- Antibiotics are indicated for the treatment of acute Group A Streptococcal pharyngitis. Sleep-disordered breathing, in the absence of signs or symptoms of acute infection, is treated surgically with tonsillectomy and adenoidectomy.
- Snoring, witnessed apneic events, gasping, mouth breathing, and a high-arched palate on physical exam are signs and symptoms suggestive of sleep-disordered breathing in children. Polysomnography is not required to make the diagnosis of sleep-disordered breathing in children, though can be used if the diagnosis is in question.
- Non-surgical treatments used to treat enlarged adenoids include antibiotics and intranasal corticosteroids. These medical treatments are less effective at treating sleep-disordered breathing in children, and they are associated with a higher rate of recurrent symptoms when compared to tonsillectomy and adenoidectomy.

Moh's Tehlu

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Research Concepts:

Adenoid Hypertrophy



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Moh'd Terbi

Question 224: The mother of a 12-month-old female child brings her for a well-child examination. She states patient has been growing and developing well and the only positive finding on the previous visit is tongue-tied. The baby was breastfed exclusively until 6 months of age and is growing and developing well. Mother would want to schedule a visit with a specialist because she has been told that tongue tie can course articulation problem and speech delay. What is the best approach?

Choices:

1. Refer the patient to the otolaryngologist for frenotomy
2. Reassure the mother and recommend observation
3. Perform frenotomy in the clinic today
4. Refer the patient for speech evaluation

Moh'd Terbi

Answer: 2 - Reassure the mother and recommend observation

Explanations:

- For asymptomatic patients with ankyloglossia, observation and reassurance are the best approaches.
- There are many data suggesting a relationship with ankyloglossia with articulation later in life. However other data does not support this finding.
- No one can predict which patients will have articulation problems but when mother bring this issue during an encounter, providers need to be prepared for future outcomes.
- Ankyloglossia can create concerns among parents, especially for articulation problems. If patients present with articulation problems, speech evaluation as well as consideration for frenotomy are appropriate.

Mohd Terbi

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Research Concepts:

Ankyloglossia




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Question 225: A 16-year-old boy diagnosed with selective IgA deficiency at the age of 8 is admitted to the hospital with pneumonia. This is his second pneumonia in the last 12 months. The patient complains of a harsh productive cough, fever (39.5 C/103.1 F), and pain in the chest. Physical examination reveals respiratory rate 26/minute, heart rate 112/minute, and blood pressure 130/80 mmHg. The neck lymph nodes are enlarged. Auscultation reveals bilateral diminished vesicular breath sounds. From the laboratory: WBC 16,000/mm^3; neutrophils 73%, bands 15%, lymphocytes 18%, and absent levels of IgA and decreased levels of IgG and IgM. X-ray examination reveals acute pneumonia and bronchiectasis. The patient is hospitalized and treated with antibiotics. What has happened with the patient before hospitalization?

Choices:

Mon'd Tervi

1. The patient has transient low levels of all immunoglobulins due to the previous pneumonia
2. The patient was never suffering from selective IgA deficiency
3. Selective IgA deficiency has transformed into common variable immunodeficiency
4. The laboratory testing is wrong and should be repeated

Answer: 3 - Selective IgA deficiency has transformed into common variable immunodeficiency

Explanations:

- Selective IgA deficiency is usually a lifelong disease. However, a few patients could progress to CVID (common variable immunodeficiency) over time, especially adolescent and young patients.
- The patients should be monitored periodically, and intravenous and subcutaneous immunoglobulins should be administered with caution after excluding the presence of anti-IgA antibodies.
- Patients who require transfusions of red blood cells (RBCs) can receive cells that have been washed to remove as much of the contaminating IgA as possible.
- The most severe complication associated with severe selective IgA deficiency is malignancy, such as adenocarcinoma of the stomach and lymphoma, particularly in older patients.

Michi Terbi

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Research Concepts:

IgA Deficiency




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Question 226: A 3-year-old male is noted to have a 2 cm mass over the thyroid cartilage that the parent's report has not changed for several months. The child has been healthy but is obese with weight at the 95th percentile and height at the 10th percentile. The thyroid gland is not palpable, and the rest of the exam is normal. What is the next step in evaluation?

Choices:

1. Thyroid-stimulating hormone (TSH) level
2. Fine needle aspiration cytology
3. Head and neck magnetic resonance imaging
4. Thyroid assessment with technetium-99m pertechnetate

Moh'd Terbi

Answer: 1 - Thyroid-stimulating hormone (TSH) level

Explanations:

- The child may have ectopic sub-hyoid thyroid tissue. TSH is an essential tool to evaluate for the diagnosis, especially when the patient is obese and short which indicates the underlying endocrinology issue.
- The normal thyroid function and the absence of manifestations in ectopic thyroid could last up to years.
- After establishing the diagnosis of hypothyroidism when the suspicion of ectopic thyroid is high, a radionuclide thyroid imaging employing technetium-99m pertechnetate is to be performed.
- The most common location of ectopic thyroid tissue is at the foramen cecum, resulting in a lingual thyroid.

Mohd Terbi

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Research Concepts:

Ectopic Thyroid




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Question 227: A 16-year-old patient with uncontrolled severe asthma presents to the emergency department with fever, breathlessness, and cough with brownish expectoration for the last seven days. His Laboratory findings show hemoglobin of 11.7 g/dL, white blood cells 5600/cmm, platelets 2,56,000/cmm, total IgE level 4000 kU/L and peripheral blood eosinophil count 2540 cells/microL. Sputum examination shows fungal hyphae, fibrin, Charcot-Leyden crystals, Curschmann spirals & dichotomous branching of fungal hyphae seen at 45-degree angles. HRCT shows bronchiectasis in the right upper lobe. Which of the following organism is most likely responsible for the patient's condition?

Choices:

1. Aspergillus niger
2. A. flavus
3. A. nidulans
4. A. fumigatus

Moh'd Terbi

Answer: 4 - A. fumigatus

Explanations:

- As per patient's history, laboratory findings and radiological finding, most probable diagnosis is allergic bronchopulmonary aspergillosis (ABPA). Aspergillus fumigatus is the most common ubiquitous airborne fungus causative organism for ABPA.
- Aspergillus conidia, because of its small diameter (2-3 μm), easily reach to the pulmonary alveoli and deposits there. A. fumigatus species need dead organic matters to survive, so they thrive on fallen leaves and its compost so infection present most profusely in the winter throughout the world.
- ABPA usually found in asthmatic patients mostly in severe asthmatic and people with cystic fibrosis.
- Aspergillus flavus, Aspergillus niger, Aspergillus terreus, and Aspergillus nidulans have emerged as important pathogens in immunocompromised individuals. Aspergillus nidulans is the second most encountered mold in CGD patients, causing almost exclusively invasive infections.

Wahid Terbi

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Research Concepts:

Allergic Bronchopulmonary Aspergillosis




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Question 228: A 17-year-old white female is being treated for type 1 diabetes mellitus with diabetic ketoacidosis (DKA) secondary to infection and insulin nonadherence. The treatments provided so far include fluid therapy, insulin, and electrolyte replacement. The anion gap remains elevated at 28 mmol/L although it is trending downward with insulin therapy. The last glucose check was 136 mg/dL. The patient is otherwise stable other than mild tachycardia with a heart rate of 110/min. What is the next step in management?

Choices:

1. Stop the insulin drip but continue the electrolyte monitoring and glucose point of care checks
2. Stop the insulin and administer bicarbonate to correct the anion gap
3. Continue the IV insulin and add dextrose
4. Continue the IV insulin with no further changes to management

Med'd Terbi

Answer: 3 - Continue the IV insulin and add dextrose

Explanations:

- Diabetic ketoacidosis (DKA) is a complication of diabetes mellitus in which the body cannot appropriately respond to increased insulin demands brought about through stress, infection, etc. The mainstay of therapy includes significant fluid therapy to replace volume loss from osmotic diuresis, electrolyte replacement, and insulin therapy.
- Although insulin therapy is necessary to help lower blood glucose levels, it also functions to slow down ketogenesis secondary to lipolysis, thus lowering the anion gap. Administering bicarbonate would be temporary and not correct the underlying metabolic derangement.
- Insulin therapy in DKA is to help lower the elevated anion gap and should continue until the anion gap normalizes. In situations where the blood glucose reaches 200 mg/dL or below, and the anion gap remains elevated, one should continue the insulin drip and add IV dextrose to avoid hypoglycemia. Continued administration of insulin diminishes ketone production by reducing lipolysis and glucagon secretion and is, therefore, correcting the underlying metabolic derangement
- Continuation of the insulin would cause hypoglycemia and potential death without further intervention. A single episode of acute hyperglycemia will not kill a patient. In contrast, a single episode of acute hypoglycemia can kill a patient.

Mohit Tariq

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Research Concepts:

Hypoglycemia

StatPearls Knowledge Base

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Moh'd Terbi

Question 229: A 2-year-old child is suspected of having aspirated a radiolucent foreign body, but the chest radiograph is normal. The child has a cough and asymmetric breath sounds on exam. Select the correct statement.

Choices:

1. There could still be a foreign body
2. Bronchoscopy is contraindicated
3. CT of the chest must be done next
4. Admit the child for observation

Moh'd Terbi

Answer: 1 - There could still be a foreign body

Explanations:

- Chest radiographs are often an initial measure for investigating for foreign body aspiration, given the relatively easy feasibility of obtaining this study. However, multiple studies have shown that chest radiographs in isolation are not sufficiently sensitive to rule out a foreign body aspiration.
- Chest radiographs have been shown to have a mediocre sensitivity and slightly better specificity for investigating for foreign body aspiration. A negative film does not rule out a foreign body aspiration.
- Chest CT is sometimes used in times of clinical ambiguity as opposed to bronchoscopy, given the benefit of not requiring any sedation. However, chest CT has been argued to be not as beneficial given the concern for radiation exposure and lack of therapeutic benefit. In a child with a suggestive history, symptoms, and negative radiographs, bronchoscopy is often performed for a definitive diagnosis.
- Observing the child without performing additional diagnostic workup may delay the diagnosis and place the patient had a higher risk for complications of a retained foreign body in the airways. One study has shown that the longer a foreign body remains in the airway, the higher the likelihood of a complication.

Mehmet Tevfik

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Research Concepts:

Foreign Body Aspiration

StatPearls Knowledge Base

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Moh'd Terbi

Question 230: A 4-year-old is brought to the emergency department with complaints of fatigue and undocumented fevers for a few days. He has previously been healthy, but his mother is worried that he looks pale. There have been no gastrointestinal symptoms, but he has woken several times in the past week with leg pain. His gums have been bleeding after brushing his teeth. The child is pale, has diffuse lymphadenopathy, splenomegaly, and scattered petechiae. There is no hepatomegaly or other findings. CBC shows WBC of 9,000/microliter, hemoglobin 8.7 g/dL, hematocrit of 24%, and platelets 8,000/microliter. An automated differential shows many atypical lymphocytes. What is the next best step in management?

Choices:

1. Anti-parvovirus B19 antibody titers
2. Anti-Epstein Barr virus antibody titers
3. Bone marrow biopsy
4. Abdominal ultrasound

Moh'd Terbi

Answer: 3 - Bone marrow biopsy

Explanations:

- The child most likely has leukemia, with acute lymphoblastic leukemia being the most common.
- The severe anemia and thrombocytopenia probably indicate bone marrow failure.
- The WBC count can be high, low, or normal.
- Bone marrow biopsy is the procedure of choice. A manual examination of the peripheral smear would reveal that the atypical lymphocytes are blast forms.

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Moh'd Terbi

Research Concepts:

Acute Lymphocytic Leukemia




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Question 231: A patient comes in with a painful, erythematous rash on his left middle finger. He admits to biting his nails but denies any particular trauma. An evaluation shows vesicular lesions across the proximal nail fold, extending along the nailbed. When asked, the patient reports a recent outbreak of herpes labialis. He is counseled on the appropriate therapy, and he asks, "What is the chance of this recurring?" What should he be told?

Choices:

1. Once treated with oral antivirals, the finger infection will not come back
2. If untreated, the infection will eventually resolve on its own but may come back
3. There is a 70% to 90% chance of recurrent infection, whether or not you are treated with antivirals
4. There is a 30% to 50% chance of recurrent infection, whether or not you are treated with antivirals

Mohamed Terbi

Answer: 4 - There is a 30% to 50% chance of recurrent infection, whether or not you are treated with antivirals

Explanations:

- Herpetic whitlow is most commonly contracted from direct exposure to an active herpes infection, most commonly herpes labialis (oral herpes).
- The herpes virus infects dermal cells but also can spread to the sensory dorsal root ganglion and remain latent. Reactivation of the latent virus can occur months to years following the primary infection.
- Treatment can be supportive as the infection is self-limited and resolves in 2 to 4 weeks. While there are few studies specific to herpetic whitlow, antivirals have been shown to shorten the duration of symptoms by up to 4 days in one study and decreased days of positive viral culture.
- Oral antivirals can lessen symptom duration. However, they do not prevent recurrent episodes of herpetic whitlow and 30% to 50% of patients will have recurrent episodes. For recurrent herpetic whitlow, suppressive therapy with an antiviral agent may be helpful.

Mohit Tekri

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Research Concepts:

Herpetic Whitlow



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Moh'd Terbi

Question 232: A well-appearing, 4-month-old infant presents to her primary care provider. The medical history is pertinent for premature birth at 35 weeks. Physical exam reveals multiple cutaneous hemangiomas involving the extremities, trunk, and one on the forehead but none adjacent to the eyes. Exam is otherwise within normal limits. Six hemangiomas are counted in total. What additional evaluation should the infant undergo?

Choices:

1. None
2. Thyroid function testing
3. Liver ultrasound
4. Ophthalmologic evaluation

Moh'd Terbi

Answer: 3 - Liver ultrasound

Explanations:

- Infants with greater than five cutaneous infantile hemangiomas have an increased risk of infantile hepatic hemangioma and should undergo liver ultrasound to evaluate the hepatic parenchyma.
- Risk factors for infantile hemangiomas include prematurity, low birth weight, and family history.
- Infants with diffuse infantile hepatic hemangioma may overproduce type III iodothyronine deiodinase, leading to acquired hypothyroidism. The absence of symptoms of hypothyroidism or hepatomegaly on exam makes this less likely in this question and would not be the next step in evaluation.
- Infantile hemangiomas of the skin, when located near the eye, may cause complications in vision including amblyopia, astigmatism, or strabismus.

Mon'd Terbi

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Research Concepts:

Hepatic Hemangioma




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Question 233: A 16-year-old previously healthy woman presents to the clinic with fever and throat pain. She was diagnosed with a viral infection 2 weeks ago. Her condition has worsened, and she now complains of left lateral neck pain. Vital signs show a fever of 102 F, pulse 120/min, blood pressure 115/70 mmHg, and 100% oxygen saturation on room air. Physical examination shows a sick but non-toxic appearing female with a "cord sign" present deep to the anterior border of the sternocleidomastoid on the right side. She also has palpable lymph nodes present bilaterally. Which of the following is the most likely site for metastatic infection in this patient?

Choices:

1. Bones
2. Liver
3. Lungs
4. Breasts

Moh'd Terbi

Answer: 3 - Lungs

Explanations:

- The sign and symptoms, along with the examination findings in this patient, are suggestive of Lemierre syndrome.
- It is a rare complication of bacterial pharyngitis/tonsillitis. It involves an extension of the infection into the lateral pharyngeal spaces of the neck with subsequent septic thrombophlebitis of the internal jugular vein.
- The lungs are the most common site of metastatic infection (85%), but joints, liver, kidney, brain, bones, heart, and meninges can all be involved.
- Imaging should include a chest radiograph to evaluate for septic emboli and other pulmonary complications, including pulmonary effusions, lung abscess, and empyema.

Mohd Terbi

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Research Concepts:

Lemierre Syndrome




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Question 234: A 17-year-old female presents with difficulty swallowing. She immigrated to the United States from Haiti two weeks ago. She began experiencing shortness of breath during moderate physical activity two months ago and began having difficulty swallowing solid foods three weeks ago. She states she chews her food thoroughly and uses a glass of water to help the food slide down. She denies any additional symptoms. Physical exam shows a grade two diffusely enlarged thyroid. Which of the following is the most likely cause of this patient's enlarged thyroid?

Choices:

1. Iodine deficiency
2. Graves disease
3. Hashimoto thyroiditis
4. De Quervain thyroiditis

Moh'd Terbi

Answer: 1 - Iodine deficiency

Explanations:

- The most common cause of goiter worldwide is iodine deficiency.
- In developed countries, goiter is more commonly secondary to Hashimoto thyroiditis.
- Eight hundred million people in the world have a diet deficient in iodine, and goiters occur in up to 200 million.
- Goiters can become quite large but are typically soft, and therefore, do not compress. They often displace the adjacent trachea.

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Moh'd Terbi

Research Concepts:

Nontoxic Goiter




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Question 235: A 17-year-old female patient presents with generalized fatigue. She has been feeling this way for the past six months, and more recently, she has noticed recurrent episodes of epistaxis. Her episodes of epistaxis often last thirty minutes at a time. There is no evidence of bleeding during the clinical examination. Her platelet count today is 40,000 platelets per microliter. She does not drink alcohol and is not currently sexually active. What treatment option is most appropriate?

Choices:

1. Anti-D immunoglobulin
2. Platelet transfusion
3. Prednisolone
4. Observation

Moh'd Terbi

Answer: 3 - Prednisolone

Explanations:

- This patient is likely presenting with immune thrombocytopenic purpura (ITP). Acute episodes of ITP may arise in children following a viral infection or another trigger such as immunization. As autoantibodies tag platelet GPIIa/IIIb receptors for destruction by the spleen, the bone marrow attempts to compensate for the developing thrombocytopenia by releasing immature megakaryocytes.
- Additional lab findings of ITP include thrombocytopenia and normal prothrombin time/partial thromboplastin time as the coagulation cascade of secondary hemostasis is not affected by the autoimmune process.
- ITP is usually self-limited, but corticosteroids are typically used as initial treatment.
- In some cases, intravenous immunoglobulin may be used to "distract" splenic macrophages, so that administered IgG is consumed instead of platelet-bound IgG. This therapy is used when there is concern about intracranial bleeding. Otherwise, splenectomy is curative therapy as it removes the source of autoantibody and the site of platelet consumption.

Moh'd Terki

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Research Concepts:

Immune Thrombocytopenic Purpura



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Moh'd Terbi

Question 236: A 2-week-old infant presents to the office with parents to evaluate his reflexes. When the side of the lips is touched, the baby turns the head towards that side. If this reflex was to persist after 12 months, what another clinical sign can be expected on the repeat physical exam?

Choices:

1. Tongue will deviate towards one side
2. Mouth will always be open
3. Tongue sitting too forward
4. Absence of saliva secretion

Moh'd Terbi

Answer: 3 - Tongue sitting too forward

Explanations:

- The rooting reflex appears soon after birth and can be reproduced by a light touch on the cheek or lips. The baby will turn the head towards that side.
- The rooting reflex involves opening the mouth and extending the tongue in preparation for feeding.
- In most healthy babies, the rooting reflex disappears by 4 to 6 months.
- If the rooting reflex persists, the infant can have several problems, including drooling, speech difficulties, and a tongue that sits too forward in the mouth. The child will have difficulty swallowing and chewing because of the dysfunctional tongue.

Mahdi Terbi

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Research Concepts:

Rooting Reflex




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Question 237: A 4-year immunocompromised boy presents with persistent lumbar back pain over the past month. There is no reported trauma, and the child's lower extremity neurologic exam, CBC, and vital signs all are normal. The provider is concerned about discitis. Which of the following imaging modalities should be used to diagnose this condition?

Choices:

1. Bone scan
2. CT of the lumbar spine
3. MRI of the lumbar spine
4. X-ray of the lumbar spine

Moh'd Terbi

Answer: 3 - MRI of the lumbar spine

Explanations:

- The patient above has concerning risk factors for discitis including his age, gender, and immunocompromised state.
- Lower-extremity neurologic examination, vital signs, and WBC may be normal.
- The diagnosis of discitis is difficult to make and is often delayed due to the commonality of back pain, and the fact that initial testing is often negative.
- The gold-standard for diagnosis of discitis is an MRI.

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Moh'd Terbi

Research Concepts:

Diskitis



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Question 238: A 12-year-old female undergoes colon cancer screening with sigmoidoscopy due to a strong family history of colorectal cancer. Hundreds of polyps are seen in the rectum and sigmoid. What genetic mutation is most consistent with her findings?

Choices:

1. RET proto-oncogene mutation
2. BRCA-1 mutation
3. APC mutation
4. p53 mutation

Moh'd Terbi

Answer: 3 - APC mutation

Explanations:

- This young female has a strong history of colon cancer requiring screening at a very early age compared to the general population. A finding of hundreds of polyps is indicative of Familial Adenomatous Polyposis (FAP).
- FAP is an autosomal dominant hereditary polyposis syndrome that results in a 100% development of colon cancer by the age of fifty if left untreated. Screening beings at 12-13 years of age with sigmoidoscopy.
- FAP involves a non-sense mutation of the APC gene of Chromosome 6.
- Once the polyp burden cannot be managed endoscopically the patient should be evaluated for surgical resection. Total proctocolectomy with ileoanal anastomosis or colectomy with ileorectal anastomosis should be performed to remove the diseased colon.

Mona Terbi

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Research Concepts:

Familial Adenomatous Polyposis




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Question 239: A 15-year-old cross country runner presents to your clinic for reevaluation of an old leg injury. She was treated during the fall season for medial tibial stress syndrome, and she improved. However, she presents during the spring season with recurrent symptoms and also has pain in her foot which is suspicious of stress fracture. Repeat radiographs show mild periosteal elevation. In addition to routine conservative management for a stress fracture, what else should be considered in this patient?

Choices:

1. Tell her she cannot run cross-country anymore
2. Obtain MRI of the affected areas to look confirm the suspicion
3. Consider and investigate other causes of her recurrent stress fractures
4. Release her to run as long as she is not limping

Moh'd Terbi

Answer: 3 - Consider and investigate other causes of her recurrent stress fractures

Explanations:

- For first time stress injuries, conservative management includes rest, analgesia, activity modification, occasionally temporary immobilization, physical therapy, and a graded return to play.
- For recurrent stress injuries, the provider needs to inquire as to what else may be contributing. For runners, this may include changing footwear, training surface, orthotics, and gait modification.
- In all athletes with recurrent stress fractures, especially young females, the provider must consider additional risk factors. In this patient, vitamin D levels and calcium should be checked. Ask about menstrual and gynecological history. If there is any concern, then an endocrine workup should be considered.
- If there is a concern about eating disorders, this should be evaluated with psychiatric testing and nutritional counseling.

Mehdi Taribi

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Research Concepts:

Stress Reaction and Fractures




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Question 240: A 17-year-old, male who is HIV-positive presents to your clinic complaining of bloody discharge and pain during anal intercourse for the past 3 days. His partner had a small, painless penile skin lesion a few weeks ago that healed. He also had some painful swelling in his groin that is getting better without treatment. Examination revealed a painless perianal ulcer. Along with testing for sexually transmitted infections, what would be the next most appropriate step?

Choices:

1. Report to the health department once tests are back
2. Instruct patient that he does not need to abstain from sexual intercourse
3. Start doxycycline 100 mg orally twice a day for 21 days
4. Anoscopy or Gram stain should be done before starting any treatment

Moh'd Terbi

Answer: 3 - Start doxycycline 100 mg orally twice a day for 21 days

Explanations:

- Patients with a clinical syndrome consistent with lymphogranuloma venereum (LGV) should be reported to the health department without waiting for diagnostic test results to become available.
- The patient should be instructed to abstain from sexual intercourse until he and his partner(s) have been treated adequately.
- Men who have sex with men with acute proctitis, who have bloody discharge, perianal ulcers, are positive for rectal chlamydia, or are HIV-positive should be treated presumptively for LGV.
- Presumptive therapy should be initiated even when anoscopy or Gram stain is unavailable.

Moh'd Terbi

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Research Concepts:

Proctitis And Anusitis




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Question 241: A 9-year-old male, weighing 32 kilograms, with a past medical history of severe persistent asthma, is admitted to the pediatric intensive care unit with status asthmaticus. He is started on continuous albuterol at 20 mg/hour, ipratropium every four hours, and methylprednisolone. He continues to worsen, developing acute respiratory failure, and is initiated on bilevel positive airway pressure. He is given a magnesium sulfate bolus, a terbutaline bolus, and initiated on a terbutaline infusion at 0.5 mcg/kg/minute. Based on the receptor(s) involved and mechanism of action of terbutaline, which of the following is the potential side effect for which the managing provider needs to be most attentive in monitoring?

Choices:

1. Hypoglycemia
2. Cardiac arrhythmia
3. Hyperkalemia
4. Seizures

Moh'd Terbi

Answer: 2 - Cardiac arrhythmia

Explanations:

- Hyperglycemia is typically seen in the use of beta-2 agonists, especially when patients are also receiving corticosteroids.
- Terbutaline has a rare adverse effect of myocardial ischemia. Tachycardia is very common, and arrhythmias occur occasionally. Arrhythmias occur more commonly if there is concurrent use of terbutaline and methylxanthines. Additionally, this patient population is more at risk for arrhythmias due to electrolyte disturbances such as hypokalemia from albuterol and terbutaline use.
- With the use of albuterol and terbutaline, patients are at risk for hypokalemia, as the potassium shifts intracellularly. Therefore, in the setting of acute hyperkalemia, nebulized albuterol can be used to temporize the associated risks that accompany the electrolyte abnormality, while additional treatments are being initiated to eliminate excess potassium.
- Seizures related to terbutaline use are exceedingly rare. There are a few case reports describing seizures in patients receiving high-dose terbutaline and in children with underlying seizure disorders.

Mon-d Terbu

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Research Concepts:

Pediatric Bronchospasm



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Moh'd Terbi

Question 242: A 1-year old boy presents with a persistent cough for the past 5 days. He has had several episodes of pneumonia and upper respiratory infections since he was born. He also has several skin infections. He is in the 10th percentile for weight and 5th percentile for height, but at birth, he was in the 50th percentile. A dihydrorhodamine test is abnormal and peripheral blood smear does not indicate hemolytic anemia. What is the most likely cause of this patient's disease?

Choices:

1. Deficiency in NADPH oxidase
2. Glutathione synthase deficiency
3. CFTR gene mutation
4. Glucose-6-phosphate dehydrogenase

Moh'd Terbi

Answer: 1 - Deficiency in NADPH oxidase

Explanations:

- Patients with chronic granulomatous disease (CGD) have an NADPH oxidase deficiency, which makes them susceptible to recurrent infections, typically of the respiratory tract.
- At the cellular level, CGD can be diagnosed by measuring the capacity of phagocytic leukocytes to form superoxide or hydrogen peroxide.
- Neutrophilic granulocytes are usually used to detect NADPH oxidase activation in the cells. NADPH oxidase assays include cytochrome c reduction assay and the nitroblue tetrazolium slide assay, both of which measure superoxide. Other assays exist to measure hydrogen peroxide including the dihydrorhodamine-1,2, 3 (DHR) assay, and the hydrogen peroxide (H_2O_2) or peroxidase activity assay. An abnormal dihydrorhodamine test is significant for a CGD diagnosis.
- While clinical history may help indicate the patient's genetic inheritance pattern, genetic testing is available to identify genetic mutations.

Mohd Tariq

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Research Concepts:

Chronic Granulomatous Disease




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improvement.

Moh'd Terbi

Question 243: A 13-year-old male is brought in by his concerned mother after complaining of chest pain during basketball practice. He experiences the pain during times of intense exercise and also has had near syncopal episodes on multiple occasions. On physical exam, he appears well developed and in no apparent distress. When listening to his heart, you detect a murmur. You ask the patient to squat to evaluate the murmur and hear that it has decreased in volume. What is the inheritance pattern of this patient's condition?

Choices:

1. Autosomal dominant
2. Autosomal recessive
3. X-linked recessive
4. Mitochondrial inheritance

Moh'd Terbi

Answer: 1 - Autosomal dominant

Explanations:

- Hypertrophic cardiomyopathy is inherited by an autosomal dominant pattern.
- It is the most commonly inherited cardiac disorder and is the leading cause of sudden death in young individuals.
- Symptoms of hypertrophic cardiomyopathy include chest pain during exertion, tachycardia, shortness of breath, syncope, and sudden cardiac death.
- A classically heard murmur is one that decreases during squatting and increases during Valsalva maneuver. The difference in murmur volume is due to the change in the amount of blood returning to the heart, affecting the ability to overcome the obstruction.

Mohd Terbi

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Research Concepts:

Hypertrophic Cardiomyopathy




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Question 244: A cord blood gas analysis is being performed during the delivery of a full-term newborn after recurrent variable decelerations were noted on fetal heart rate tracings, as recommended by the American College of Obstetricians and Gynecologists (ACOG) and the American Academy of Pediatrics (AAP). Which of the following sampling methods is the most reliable for the interpretation of cord blood gases?

Choices:

1. Sampling of venous cord blood immediately after delivery from a doubly clamped umbilical segment
2. Sampling of venous cord blood 30 minutes after delivery from a doubly clamped umbilical segment
3. Sampling of both arterial and venous cord blood immediately after delivery from a doubly clamped umbilical segment
4. Sampling of both arterial and venous cord blood 30 minutes after delivery from an unclamped umbilical segment

Mohsen Terbi

Answer: 3 - Sampling of both arterial and venous cord blood immediately after delivery from a doubly clamped umbilical segment

Explanations:

- It is always important to obtain both venous and arterial blood samplings for analysis. In conditions causing umbilical cord compression, the arterial cord blood is mostly affected, while the venous cord blood gas analysis may remain normal.
- Double clamping of a 10 to 20 cm umbilical segment should be performed as soon as possible after delivery.
- When the cord segment is clamped, pH, pO_2, and pCO_2 remain reliable for up to 60 minutes after birth.
- If the cord segment remains unclamped (in continuity with the placenta), cord blood gases are affected by the ongoing placental metabolism and become unreliable for interpretation 20 minutes after delivery.

Moh'd Terbi

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Research Concepts:

Cord Blood Gas




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Question 245: A newborn is found to have cryptorchidism, a raisin-appearing abdominal wall, and bilateral hydroureteronephrosis. Which of the following is the most accurate statement, to be conveyed to the parents?

Choices:

1. "Your child will be infertile"
2. "Your child will walk with an unusual gait"
3. "Your child will require abdominal wall repair"
4. "Your child will require bilateral orchiopexy"

Moh'd Terbi

Answer: 4 - "Your child will require bilateral orchiopexy"

Explanations:

- Also known as Eagle-Barrett syndrome, the triad syndrome, prune belly syndrome is a rare, congenital disorder largely characterized by the clinical triad of deficient abdominal musculature, cryptorchidism, and urinary tract abnormalities.
- Nearly every male child born with prune belly syndrome displays bilateral cryptorchidism where the testes lie intra-abdominally, bordering the dilated ureters at the level of the iliac arteries.
- It is of utmost importance to walk the parents of a patient born with prune belly syndrome through the early perinatal period and ensure that they understand the importance of continued follow-up and surgical planning. Most parents will be relieved to know that the prune belly appearance will lessen over time, not every patient needs abdominal wall reconstruction and that their child will potentially live a normal life with the ability to have kids of their own in the future should they so desire.
- For parents, it is important to educate them that orchiopexy should be done near the six month age mark and this time frame is an appropriate one to address the abdominal wall surgically but only if it is necessary.

Monica Tarin

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Research Concepts:

Prune Belly Syndrome



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Moh'd Terbi

Question 246: A teenager was hit in the head during a football game. He lost consciousness (LOC) for more than a minute and was managed in the emergency room. He has a Glasgow coma scale of 15 and is alert. He would like to return to school sports. What is the current protocol for return to activity in such scenarios?

Choices:

1. He can go to school full time right away
2. He should be at complete rest with no activity initially
3. He should attend school but with no sporting activity
4. He should attempt no contact sports but can attend school

Moh'd Terbi

Answer: 2 - He should be at complete rest with no activity initially

Explanations:

- When an individual loses consciousness following head trauma, most people recover fully if the period was less than 15 to 30 seconds.
- In individuals with LOC for more than a minute, returning back to the same level of activity should be a graded process.
- Initially, the teenager should be told to be at complete rest with no physical activity.
- The next step is light aerobic activity, followed by sport-specific activity, and then non-contact practice. If no problems arise, then one can resume regular practice.

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Moh'd Terbi

Research Concepts:

Blunt Head Trauma




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Question 247: A 16-year-old girl presents to the clinic for follow-up. She weighed 58 kg and was diagnosed with type 1 diabetes three years ago when her glucose on routine bloodwork was noted to be 158 mg/dL with hemoglobin A1c (HbA1c) 6.8%. She is currently being managed with insulin glargine 10 units, but she has never required prandial insulin. Her current HbA1c is 6.5%. Which of the following possible features, if present, is most suggestive of a potential diagnosis other than type 1 diabetes?

Choices:

1. Her brother, father, and paternal uncle also had a diagnosis of diabetes made in childhood or young adulthood and are managed with basal and prandial insulin
2. Her pancreatic autoantibodies were negative at the time of diabetes diagnosis
3. Her weight at birth was low
4. Her brother was diagnosed with diabetes at age 15 years when he presented with ketoacidosis and HbA1c of 11%

Mohsen Terbi

Answer: 2 - Her pancreatic autoantibodies were negative at the time of diabetes diagnosis

Explanations:

- Maturity-onset diabetes of the young (MODY) has several forms but is suggested by absent pancreatic autoantibodies, relatively low exogenous insulin need beyond the typical "honeymoon period," and family history of similar presentation before age 30.
- There are several forms of MODY, of which MODY3 is most common, representing 30% to 60% of cases, and is due to a mutation in the HNF1-alpha gene on chromosome 12. MODY3 is often sulfonylurea-responsive though it may progress to requiring insulin later in life. Making the appropriate diagnosis may spare years of unnecessary insulin injections.
- Patients with certain types of MODY (like 1, 12, or 13) might have been exposed to higher levels of insulin in utero, causing transient hypoglycemia and also macrosomia, and high birth weight.
- MODY does not present with ketoacidosis, and the HbA1c is in the lower abnormal range, usually less than 8%.

Mohit Tekh

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Research Concepts:

Maturity Onset Diabetes in the Young




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improvement.

Moh'd Terbi

Question 248: A 15-year-old boy presents with a history of refractory epilepsy. Who initially presented as gelastic seizures at the age of 2.5 years, and this has now progressed to weekly clusters of gelastic and complex partial seizures. Since an early age, he has had a history of being restless, impulsive, and aggressive. At the age of 10 years, his school teachers described him as being oppositional, defiant with several outbursts of rage and violent attacks. Multiple pharmacologic treatments have failed in controlling the seizures and rage attacks. MRI at three years of age had confirmed the presence of hypothalamic hamartoma. Which of the following statement describes the next best course of action in the patient's treatment plan?

Choices:

1. Surgical resection of hypothalamic hamartoma
2. Continue treatment with antiepileptic drugs
3. A brief behavioral intervention program
4. No further action needed at this time

Mehdi Terbi

Answer: 1 - Surgical resection of hypothalamic hamartoma

Explanations:

- Surgical removal of hypothalamic hamartoma is the more definitive treatment in controlling seizures. The gelastic seizures associated with hypothalamic hamartomas are very difficult to treat or manage. These seizures are refractory to medical treatment and attempt to surgically control the seizures have been reported.
- Often the surrounding hypothalamic tissue interferes with safe surgical access, and alternative modalities include stereotactically targeted radiation therapy or radiofrequency lesioning.
- Recent studies have reported a complete resection as not necessary and disconnecting the tumor is sufficient for seizure control, therefore less invasive modalities are increasingly being used.
- Early intervention is quite critical as this condition is progressive with worsening cognitive and behavioral issues over time.

Moh'd Terki

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Research Concepts:

Aggression In Hypothalamic Hamartoma




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Question 249: A 6-month-old boy debilitated with cerebral palsy, born at 28 weeks of gestation, who is tracheostomy and gastrostomy tube dependent, presents with two days of increased oxygen requirement. He did not have any fevers, and his current temperature is 98.6 F, with a heart rate of 70 bpm, respiratory rate of 26 breaths per minute, and blood pressure of 110/70 mmHg. He is currently on 30% FiO2. On workup, his complete blood count is 5000 with 65% neutrophils, 35% lymphocytes, 5% monocytes, the tracheal Gram stain shows gram-positive cocci, with no white blood cells. In the past, his tracheal culture has grown Pseudomonas aeruginosa. A multiplex polymerase chain reaction (PCR) test sent from the nasopharyngeal swab is positive for Respiratory syncytial virus. The chest x-ray revealed right middle lobe atelectasis, but cannot exclude consolidation. What is the next best step?

Choices:

Mohsen Terbi

1. Start vancomycin from gram-positive cocci
2. Supportive care with ventilation and hydration
3. Start vancomycin plus cefepime
4. Start ribavirin

Answer: 2 - Supportive care with ventilation and hydration

Explanations:

- This infant likely has Respiratory syncytial virus infection. He does not have fevers, the complete blood count is normal, the tracheal Gram stain did not show any white blood cells. Gram-positive cocci were later identified as normal oral flora. In addition, the viral testing explains the increased oxygen requirement.
- Clinicians should be cautious in differentiating colonization of tracheostomy tube from bacterial infection. Tracheitis or ventilator-associated pneumonia is typically associated with high-grade fevers, many white blood cells on the tracheal Gram stain.
- Unnecessary antibiotics can be responsible for resistant organisms in these medically challenged children.
- The mainstay of treatment for a viral infection is supportive care.

Mahdi Terbi

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Research Concepts:

Ventilator-associated Pneumonia




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Question 250: A 13-month-old female arrives to the emergency department with chief complaint of cough. The parents state that prior to today she was in her normal state of health, and today she was playing with his brother and then developed a consistent cough since. The patient is alert, non-ill appearing and there is stridor auscultated. Which of the following is indicated next?

Choices:

1. Back blows with chest compressions
2. Bronchoscopy
3. Chest radiograph
4. Computed tomography of the chest

Moh'd Terbi

Answer: 3 - Chest radiograph

Explanations:

- The sudden onset of stridor not in the setting of fevers or recent illness typically results from foreign body aspiration.
- Since this patient is stable, she can undergo imaging modalities to look for foreign bodies, and chest radiograph should be obtained.
- In those where the clinical suspicion is high for foreign body and a chest x-ray is normal, then bronchoscopy or computed tomography should be obtained.
- The most common site for an aspirated foreign body is the right mainstem bronchus.

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Moh'd Terbi

Research Concepts:

Stridor




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Question 251: An 8-year-old previously healthy girl has recently refused to go to sleep at night. Her parents state that she also recently started to have violent outbursts at home and school. She has been having multiple episodes of enuresis and seems fearful of meeting new people, especially adults. She has been afebrile, and her parents deny any ingestion or burning with urination. When asked about new stressors, they do admit that recently the patient's uncle has moved into the household. Given the suspected diagnosis, what should the next step in management be?

Choices:

1. Confront the uncle to obtain more historical information
2. Obtain brain MRI to assess for central causes of symptoms
3. Call child protective services to initiate a report of suspected abuse
4. Expectant management with close Pediatrician follow-up

Moh'd Terbi

Answer: 3 - Call child protective services to initiate a report of suspected abuse

Explanations:

- This patient is showing signs of acting out and behavior that is not her baseline.
- With the new stressor of the uncle moving into the house, there has to be a suspicion of sexual abuse or trauma.
- Healthcare providers have a medicolegal duty to report all cases of abuse involving minors
- While additional workup may eventually take place, notifying the proper local childcare protective services should not be delayed.

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Moh'd Terbi

Research Concepts:

Child Sexual Abuse And Neglect




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Question 252: A 3 day-old infant is brought for his initial visit. He is a full-term baby boy with an uneventful birth and nursery stay. His mother had full prenatal care with an uncomplicated pregnancy. Today there is a new, 2/6, systolic murmur, located over the left upper sternal border. The murmur radiates to the back and axilla bilaterally. The infant is otherwise healthy. What is the best next step?

Choices:

1. Refer to a pediatric cardiologist
2. Reassure the family that the murmur is most likely benign
3. EKG
4. Admit for close observation in the neonatal intensive care unit

Moh'd Terbi

Answer: 2 - Reassure the family that the murmur is most likely benign

Explanations:

- The murmur described in the question is most likely a benign branch pulmonary artery murmur. Reassurance is all that is needed as this murmur will most likely resolve on its own.
- This murmur is most commonly seen in the first few days of life, often in premature babies. However, it can also occur in term babies. It generally disappears by 1 to 8 weeks of age.
- The murmur is described as a low grade, medium-high pitched, short systolic murmur heard over the upper right or upper left sternal borders and classically radiates to the axilla bilaterally.
- The murmur is caused by turbulence through the branch pulmonary arteries due to the acute angle of the bifurcation of the left and right pulmonary arteries from the main pulmonary artery. As the child grows and the lungs continue to expand this angle is improved, and the murmur resolves.

Mohsen Terbi

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Research Concepts:

Innocent Murmur




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Question 253: A 13-year-old female has had repeated episodes of swelling of her feet, hands, and neck. The swelling occurs after exercise or emotional stress and can last up to 3 days. On two occasions, the swelling was accompanied by abdominal pain, diarrhea, and vomiting. Physical exam, CBC, erythrocyte sedimentation rate, and chemistry panel have been normal. An older brother and a paternal uncle have similar symptoms. What is the most likely diagnosis?

Choices:

1. Hereditary angioedema
2. Systemic lupus erythematosus
3. Chronic spontaneous urticaria
4. Cholinergic urticaria

Moh'd Terbi

Answer: 1 - Hereditary angioedema

Explanations:

- Hereditary angioedema (HAE) is a rare deficiency of plasma protein C1 inhibitor, allowing activation of the classic complement cascade. Inheritance is autosomal dominant.
- Symptoms are most prevalent in adolescents.
- Serum C4 levels can be useful in screening for HAE. Often levels are decreased during attacks and between attacks. The test can be repeated if the C4 level is normal, but suspicion for HAE is high.
- Edema of the gastrointestinal tract or larynx can occur.

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Moh'd Terbi

Research Concepts:

Hereditary Angioedema




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Question 254: A 6-year-old male has a 10-day history of a rash and sore throat. The patient has had a fever but no upper respiratory symptoms. The patient has erythema of the posterior pharynx and 1- to 10-millimeter erythematous plaques over the trunk in a random pattern. What test is most important?

Choices:

1. CBC with differential
2. Rapid strep screen
3. Monospot
4. Skin biopsy

Moh'd Terbi

Answer: 2 - Rapid strep screen

Explanations:

- The small lesions with random distribution are most characteristic of guttate psoriasis.
- This condition can flare in response to streptococcal pharyngitis. Physical examination should also be performed as a perianal streptococcal infection is another important trigger.
- If the rapid step is negative, a formal throat culture should be done.
- If the diagnosis is unclear, a skin biopsy may be needed.

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Moh'd Terbi

Research Concepts:

Guttate Psoriasis




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Question 255: A 15-year-old boy presents to his primary provider for a well-child check. His height is at 80th percentile, weight at 50th percentile, and mid-parental target height is 50th percentile. He has always had some difficulty with verbal processing and language delay but is in mainstream classes at school. He has a fine intention tremor. On pubertal exam, he has Tanner IV pubic hair and 4 mL testes bilaterally. What test is most likely to reveal the underlying diagnosis.

Choices:

1. Follicle stimulating hormone (FSH)
2. Luteinizing hormone (LH)
3. Total testosterone
4. Karyotype

Moh'd Terbi

Answer: 4 - Karyotype

Explanations:

- Klinefelter syndrome is characterized by tall stature, primary gonadal failure, and neuropsychological differences including below average verbal processing and sometimes behavioral issues.
- Karyotype reveals extra X chromosome(s) in a phenotypic male. Over 90% have 47, XXY karyotype, though up to 10% have mosaic forms (such as 46, XY/47, XXY) or other aneuploidy (48, XXXY or 49, XXXXY).
- Primary gonadal failure is a hallmark and may cause undervirilization in the neonate with microphallus, hypospadias, and cryptorchidism, but more often presents with discordant pubertal exam in the adolescent. For example, Tanner IV pubic hair with 4 mL testes. Typically, peripubertal testicular size as would be expected in Tanner II.
- FSH and LH often rise progressively in the later part of adolescence and into adulthood and total testosterone is typically in the low-normal range. In a mid-pubertal boy, however, karyotype will reveal the underlying diagnosis while FSH/LH/testosterone may or may not be abnormal and would not identify the underlying diagnosis.

Mehdi Tehrani

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Research Concepts:

Klinefelter Syndrome



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Moh'd Terbi

Question 256: A 6-month-old, weighing 8 kg, is brought to the emergency department because of poor feeding and listlessness. The infant is breathing spontaneously but is responsive only to pain. Pulses are not palpable. The cardiac monitor reveals a supraventricular tachycardia of 250 beats per minute. What should be done immediately?

Choices:

1. Administer verapamil 0.1 mg/kg, slow IV push
2. Immediate synchronized cardioversion with 4 Joules
3. Administer digoxin 0.02 mg/kg IV
4. Immediate defibrillation with 16 Joules

Moh'd Terbi

Answer: 2 - Immediate synchronized cardioversion with 4 Joules

Explanations:

- This unstable patient requires immediate cardioversion with a dose of 0.5 to 1 J/kg and, if ineffective, increased to 2 J/kg.
- Intravenous digoxin is used to treat supraventricular tachycardia non-emergently, as it may take hours to work.
- Verapamil is contraindicated in children under two years of age, as it can cause irreversible cardiovascular collapse due to their low calcium stores.
- In a patient with a pulse and organized rhythm, synchronized cardioversion is indicated over defibrillation. In synchronized cardioversion, the defibrillator times the shock to coincide with the peak of the QRS complex. This minimizes the potential for R on T phenomenon that can push the patient into ventricular tachycardia, usually polymorphic.

Mohd Terbi

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Research Concepts:

Supraventricular Tachycardia




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Question 257: A 17-year-old male presents with left knee pain and swelling, as well as red burning eyes. He reports that he did have some penile discharge two weeks ago that has since resolved. What is the most likely diagnosis?

Choices:

1. Nongonococcal urethritis
2. Reactive arthritis
3. Lymphogranuloma venereum
4. Septic arthritis

Moh'd Terbi

Answer: 2 - Reactive arthritis

Explanations:

- Reactive arthritis, previously known as Reiter syndrome, classically presents with the triad of urethritis, conjunctivitis or uveitis, and arthritis. It is an autoimmune response to an infection. Other potential findings include prostatitis, cystitis, diarrhea, and skin or nail lesions.
- Symptoms are often precipitated by a gastrointestinal or genitourinary tract infection caused by Shigella, Salmonella, or Campylobacter. Gonorrhea and chlamydia are also potential causes.
- Diagnosis is based on history and examination findings. Reactive arthritis is linked to HLA-B27
- Treatment should focus on the underlying cause, where applicable, as well as on symptoms. NSAIDs are used for anti-inflammatory effects and pain control. Corticosteroids and disease-modifying drugs such as sulfasalazine, methotrexate, etanercept, and infliximab have also been used. Patients who test positive for chlamydia are typically treated with doxycycline.

Mona Tehri

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Research Concepts:

Nongonococcal Urethritis




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improvement.

Moh'd Terbi

Question 258: A 16-year-old male patient presents to the hospital with a 2-week history of reddish-brown macules and patches on the shins and calves. Within the patches, there are stippled pinhead-sized puncta that resemble grains of cayenne pepper. His complete blood count is normal. The lesions are not pruritic, and the patient otherwise feels well. What is the next most appropriate step in management?

Choices:

1. Methylprednisolone dose pack
2. Clobetasol cream
3. Screen for coagulopathies
4. Reassurance that no treatment is required

Moh'd Terbi

Answer: 4 - Reassurance that no treatment is required

Explanations:

- Progressive pigmentary dermatosis (Schamberg disease) is a generally asymptomatic pigmented purpuric dermatosis in which red-brown to orange puncta resembling cayenne pepper erupt on the lower extremities.
- As with all pigmented purpuric dermatoses, no treatment is required, especially if the rash is not symptomatic.
- It is important to educate patients that this is a benign condition and no further workup is needed.
- Medium potency topical corticosteroids can be used for treatment if desired by the patient. However, treatment is often ineffective, and the disease can be chronic.

Mohd Terbi

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Research Concepts:

Pigmented Purpuric Dermatitis




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Question 259: A 4-day-old infant in the nursery has worsening jaundice. The patient is the first child of a 32-year-old mother, who had an uncomplicated full-term pregnancy and a normal spontaneous vaginal delivery. The mother is otherwise healthy but has a sister who had her gallbladder removed as a child. The infant has been formula-fed and has been eating and stooling normally. The total bilirubin level is 19.2 mg/dL, with a direct fraction of 0.3 mg/dL. On physical exam, the infant is jaundiced but otherwise well with no other significant physical findings. Which of the following should not be included in the laboratory evaluation?

Choices:

1. Complete blood count with peripheral blood film for erythrocyte morphology
2. Coombs tests direct and indirect
3. Coagulation studies
4. Blood group and Rh determination for both the mother and the infant

Mohit Terbi

Answer: 3 - Coagulation studies

Explanations:

- Evaluation for neonatal hyperbilirubinemia with suspected hemolytic anemia should include evaluation of a complete blood count with a peripheral blood film, maternal and neonatal blood groups, and Coombs tests.
- Blood group and Rh determination for both the mother and the infant are needed to evaluate for ABO and Rh incompatibility or other blood group incompatibilities.
- Direct and indirect Coombs tests evaluate whether or not there are any antibodies that could be contributing to the hemolytic process.
- In the absence of excessive bleeding, petechiae, or bruising, and in a healthy newborn, there is no indication for coagulation studies. A complete blood count will reveal the degree of anemia if any. The peripheral smear will demonstrate the morphologic features of the red blood cells that could suggest underlying etiologies.

Mehdi Terbi

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Research Concepts:

Unconjugated Hyperbilirubinemia




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Question 260: A patient presents with nodulocystic acne in which there are interconnecting sinuses under the skin. Which of the following would not be an expected finding in this condition?

Choices:

1. Severe scarring
2. Abscesses
3. Absence of comedones
4. Communicating cysts

Moh'd Terbi

Answer: 3 - Absence of comedones

Explanations:

- Acne conglobata is an unusual form of acne, typically characterized by double comedones.
- Acne conglobata is a severe form of acne with drainage of foul-smelling seropurulent material.
- Acne conglobata presents as abscesses and scarring cysts.
- The cause of acne conglobata is not known.

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Research Concepts:

Moh'd Terro

Acne Conglobata




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Question 261: An 18-year-old woman with no prior medical history presents to the emergency department with palpitations, dizziness, and chest pain. She was playing basketball when she started to feel chest pain that has been continuously present. Her blood pressure is 160/80 mmHg, heart rate is 90/min, and O2 saturation is 95. She is given supplemental O2, and an EKG is obtained. The EKG shows abnormal Q waves in the inferior and lateral leads, P wave abnormalities, and inverted T waves. During chest auscultation, a fourth heart sound along with a systolic murmur is heard. Based on the physical examination and the EKG results, the provider administers nitroglycerin to the patient. Which mechanism of the drug could worsen the patient's symptoms?

Choices:

1. Decreased preload
2. Decreased afterload
3. Increased coronary blood flow
4. Decreased coronary blood flow

Moh'd Terbi

Answer: 1 - Decreased preload

Explanations:

- The patient's signs and symptoms, age of onset, and EKG findings point to hypertrophic cardiomyopathy. The cardiac hypertrophy causes outflow obstruction that leads to chest pain, heart palpitations, and possibly syncope.
- Decreased preload from nitrates may worsen the obstruction due to decreased left ventricular filling.
- Nitrates are contraindicated in preload sensitive pathologies, such as right ventricular infarction and hypertrophic cardiomyopathy.
- Nitrates can dilate coronary arteries so that it can increase coronary blood flow, but that would not impact the patients with hypertrophic cardiomyopathy.

Mohd Terbi

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Research Concepts:

Nitrates




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Question 262: A 7-year-old boy presents with a pronounced limp secondary to pain in his leg. The pain is around his left knee, and on physical examination, the left knee is swollen. Two weeks earlier, he had a painful right ankle with limping. His mother reports he has had an elevated temperature, but she has not measured it. He lives in a rural area that has a stream running through the back of the property. Prior to aggressive-invasive therapy, what infective process should be considered that may not need surgical intervention as the primary mode of treatment?

Choices:

1. Tuberculosis
2. Salmonella infection
3. Lyme disease
4. Polio

Moh'd Terbi

Answer: 3 - Lyme disease

Explanations:

- Lyme disease is an infective process that may mimic orthopedic joint infections. Transient synovitis, which is accompanied by a slight fever, is often the presentation. The presence of a bulls-eye rash usually confirms the diagnosis. The term for the rash is erythema migrans.
- Medical management is the treatment of choice for Lyme arthritis. The drug most commonly used is doxycycline. Amoxicillin or cefuroxime axetil is used in children under 8 years. It is an infection with Borrelia burgdorferi, which is carried by ticks.
- It usually responds to medical management.
- Tick bites in which the organism is removed in 48 hours usually do not proceed to the systemic form of the disease.

Walid Terbi

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Research Concepts:

Lyme Disease




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Question 263: A 10-year-old male presents with polyuria and polydipsia. His BMI is in the 90th percentile for age, but he has lost 5 pounds (2.3 kg) in the last month. He has a positive family history of type 2 diabetes mellitus (DM) in his paternal grandmother. Labs show hyperglycemia with mild diabetic ketoacidosis (DKA)and glucosuria. He is admitted to the general pediatric floor for diabetes teaching. Does he have type 1 or type 2 diabetes?

Choices:

1. His clinical picture is not clear, he may have type 1 or type 2. Further tests that would help differentiate should be completed
2. He most likely has type 2 diabetes due to his obesity and positive family history
3. He most likely has type 1 diabetes due to his age and his mild DKA on lab work
4. He most likely has type 1 diabetes because he experienced polyuria, polydipsia, and weight loss

Mohsen Terbi

Answer: 1 - His clinical picture is not clear, he may have type 1 or type 2. Further tests that would help differentiate should be completed

Explanations:

- Adolescent patients can present difficulty in diagnosing type 1 vs. type 2 diabetes at initial presentation. Although this child is overweight, the most common type of diabetes in children is still type 1. Labs that can help differentiate between the two include fasting insulin levels, C-peptide, and type 1 specific autoantibodies.
- This child's clinical picture is not clear. Although obesity is a risk factor, type 1 diabetes is still more common in children. Obesity is prevalent in children, even those with type 1. This is a risk factor, but not enough to clinically differentiate between the type 1 or 2. Positive family history does contribute to type 2 DM. However, this patient only has a grandparent with DM, not a first-degree relative. Therefore, although this is important information, it does not appear he has a very strong family history of the disease.
- A child who has not yet entered puberty or their growth spurt is less likely to develop insulin resistance.
- However, type 2 DM can present at young ages such as the patient in this clinical scenario. In adults, type 2 is less likely to cause DKA. However, in pediatric patients, DKA can occur with either type.

Wichin Terbi

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Research Concepts:

Pediatric Type 2 Diabetes Mellitus

StatPearls Knowledge Base

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Moh'd Terbi

Question 264: A 1-year-old girl is brought to the clinic with a hairy plaque of the right thigh. Physical examination shows a well-limited skin-colored plaque of 5 cm, covered with villous hair. What is the most likely diagnosis?

Choices:

1. Congenital smooth muscle hamartoma
2. Acquired smooth muscle hamartoma
3. Congenital melanocytic nevus
4. Becker hamartoma

Moh'd Terbi

Answer: 1 - Congenital smooth muscle hamartoma

Explanations:

- The classic form of the congenital smooth muscle hamartoma presents as a well-limited skin-colored or pigmented plaque covered with villous hair.
- The diagnosis of congenital smooth muscle hamartoma is usually made at the early infancy.
- The congenital smooth muscle hamartoma is a common condition and the diagnosis should be considered in front of any congenital hairy plaque.
- Unlike smooth muscle hamartoma, congenital melanocytic nevus is necessarily a pigmented lesion.

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Moh'd Terbi

Research Concepts:

Congenital Smooth Muscle Hamartoma




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Question 265: A 15-year-old baseball player who has grown 6 inches in the past eight months presents to the clinic with generalized pain in his shoulder when he throws. The pain resolves when he is not throwing. Based on the history, Little League shoulder is suspected. Where would the patient be tender to palpation?

Choices:

1. Subacromial space
2. Proximal lateral humerus along the physis
3. Proximal medial humerus
4. Over the acromioclavicular joint

Moh'd Terbi

Answer: 2 - Proximal lateral humerus along the physis

Explanations:

- Children are at higher risk for Little League shoulder during growth spurts due to strength and flexibility imbalances.
- Prior to advanced stages of Little League shoulder in throwing athletes, the shoulder pain will resolve when the child is not throwing.
- The proximal humeral epiphysis is the site of tenderness because this is where the repetitive microtrauma from throwing leads to cartilage damage.
- The epiphyseal plate is at increased risk for injury in adolescents because it is weaker than neighboring ligaments. This distinction is significant and explains why this age group is more likely to suffer growth plate injuries whereas adults would suffer tendon or ligament injuries.

Moh'd Terbi

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Research Concepts:

Proximal Humeral Epiphysiolysis




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Question 266: A 7-year old girl is brought to the hospital after suffering multiple injuries after being run over by a car. She has since been intubated, and her vital signs include a temperature of 37 C, pulse of 130 beats/min, respiratory rate of 20 breaths/min, and blood pressure of 90/50 mmHg. The girl has bruising involving her posterior trunk, buttocks, and abdomen. On auscultation, her heart has a regular rate and rhythm with no murmurs, and her lungs are clear bilaterally. Her abdomen is rigid and slightly distended. Her extremities are cool and mottled, with a capillary refill time of 3 seconds. There are no other external signs of trauma. What is the most appropriate fluid management for this child's first 24 hours of treatment?

Choices:

1. Lactated Ringer solution
2. Five percent dextrose with 0.2% sodium chloride (NaCl)
3. Five percent dextrose with 0.45% NaCl
4. Ten percent dextrose with 0.45% NaCl

Mahdi Terbi

Answer: 1 - Lactated Ringer solution

Explanations:

- Fluid management in the first 24 hours after a blunt trauma with risk of internal bleeding should include an intravenous (IV) crystalloid solution.
- Failure to adequately restore or maintain intravascular volume can adversely affect hemodynamics and lead to lactic acidosis and multiple organ failure.
- To adequately maintain intravascular volume, the choice of fluid should be isotonic, such as normal saline (0.9%) or lactated Ringer's solution.
- If the child is in acute shock, additional boluses of isotonic fluid may be required.

Mohd Terbi

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Research Concepts:

Waddell Triad




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Question 267: A newborn child keeps turning blue when he eats and becomes pink when he cries. During his newborn physical exam, his left eye was noted to have an inferiorly incomplete iris that caused the pupil to take the shape of a keyhole. What is the most likely cause of the cyanosis?

Choices:

1. Nasal polyps
2. Deviated nasal septum
3. Choanal atresia
4. Nasal valve collapse

Moh'd Terbi

Answer: 3 - Choanal atresia

Explanations:

- Choanal atresia is the occlusion of the posterior nasal cavity due to the persistent buccomucosal membrane or overgrowth of bone and/or membrane surrounding the posterior nasal aperture.
- This newborn also has a coloboma making this most likely to be apart of CHARGE syndrome.
- CHARGE syndrome is characterized by coloboma, heart defects, atresia (bilateral), genital abnormalities, and ear abnormalities.
- Diagnosis can be made by inserting a small transnasal catheter and visualizing a non-patent nasal passage via CT, endoscopy, or mirror.

Mahdi Terbi

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Research Concepts:

Anatomy, Head and Neck, Nasal Cavity




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Question 268: A 17-year-old football player presents with complaints of a 3-day history of progressive right knee pain. He states that he was running when he felt a pop in his knee following a sudden change of direction. He continued to play the rest of the game. The next day, his knee began to swell. He admits to diffuse knee swelling and pain over the medial joint line as well as occasional popping and clicking through the knee with running and climbing stairs. On physical exam, the patient has a positive McMurray and Apley compression test. Lachman, anterior and posterior drawer, and valgus and varus stress tests are negative. What is the most likely diagnosis?

Choices:

1. Anterior cruciate ligament tear
2. Patellar subluxation
3. Patellar tendonitis
4. Meniscal tear

Moh'd Terbi

Answer: 4 - Meniscal tear

Explanations:

- Although anterior cruciate ligament (ACL) tears can present as a pop with a change in movement, they most likely present with immediate pain and swelling. The patient likely would not be able to continue to play with a torn ACL. The patient also would have positive Lachman and anterior drawer signs on physical exam.
- Patellar subluxation usually occurs with a sudden displacement of the patella either medially or laterally with spontaneous relocation. This is prominent in young female athletes with genu valgus or vastus medialis weakness. Pain and tenderness are usually located in the prepatellar region. An effusion may be present. There would not be a positive McMurray or Apley compression test. A diagnostic test shows patellar grinding.
- Also known as jumper's knee, the pain from patellar tendonitis usually is chronic and results from microtears of the patellar tendon. Pain is located over the inferior pole patellar tendon. Usually, there is no effusion.
- Meniscal injury is the most likely diagnosis for his complaints. Common presenting symptoms of meniscal tears include an initial "pop" with a sudden change of movement, pain and swelling developing over the following days, and complaints of popping and clicking of the knee.

Michael Terbi

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Research Concepts:

Knee Meniscal Tears

StatPearls Knowledge Base

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Moh'd Terbi

Question 269: A 17-year-old female comes to the emergency department due to abdominal pain. Upon further questioning, she also has had nausea and vomiting for the past 3 days. Her vitals are blood pressure 118/84 mmHg, heart rate 85 bpm, and a temperature of 98.6 F. She explains that she has undergone extreme fasting to lose enough weight for competition among her friends. With further investigation, it is revealed that her duodenum is being compressed between the abdominal aorta and what other structure?

Choices:

1. Superior mesenteric artery
2. Celiac trunk
3. Inferior mesenteric artery
4. Inferior vena cava

Moh'd Terbi

Answer: 1 - Superior mesenteric artery

Explanations:

- Superior mesenteric artery syndrome (SMAS) occurs when the third and fourth portions of the duodenum are compressed by the SMA and the abdominal aorta.
- Compression usually occurs when retroperitoneal fat or lymphatic tissue rapidly decreases.
- Causes can be caused by insults that decrease these tissues such as abdominal trauma, weight loss, starvation, or rapid linear growth.
- The typical presentation of this syndrome includes nausea, vomiting, early satiety, and abdominal pain.

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Moh'd Terbi

Research Concepts:

Superior Mesenteric Artery Syndrome




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Question 270: A 2-year-old boy presents with a rash on his arms and legs. The rash is itchy and consists of raised bumps. His parents are concerned because this rash is very different from his usual eczema. He is otherwise doing well and has no other symptoms or physical exam abnormalities. What is the next appropriate step in management?

Choices:

1. Biopsy of the lesions
2. Testing for hepatitis B serology
3. Reassure parents that this is benign and will resolve without intervention
4. Testing for Epstein-Barr virus serology

Moh'd Terbi

Answer: 3 - Reassure parents that this is benign and will resolve without intervention

Explanations:

- This distribution is consistent with papular acrodermatitis, or Gianotti Crosti syndrome, which is benign and will resolve without other treatment required.
- Papular acrodermatitis is more commonly reported in patients with another atopic disease, such as this patient's eczema.
- While papular acrodermatitis has been associated with hepatitis B and Epstein-Barr virus, without symptoms of active infection at this time, further testing would not be indicated.
- Biopsy findings are generally nonspecific signs of inflammation.

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Moh'd Terbi

Research Concepts:

Papular Acrodermatitis




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Question 271: A 5-year-old female is brought in with a 3-day history of fever and cough. The temperature is 39.2 C and respiratory rate is 42. There are decreased breath sounds and dullness to percussion on the right. Chest radiograph shows opacity of the right side. What is the appropriate initial treatment?

Choices:

1. Triple antibiotics including vancomycin
2. Tube thoracostomy
3. Bronchoscopy
4. Nebulized N-acetylcysteine

Moh'd Terbi

Answer: 1 - Triple antibiotics including vancomycin

Explanations:

- The patient most likely has pneumonia with empyema.
- The most probable causative organisms include Staphylococcus aureus, Streptococcus pyogenes, and Streptococcus pneumoniae.
- Vancomycin should be included in the antibiotics due to the high rate of resistance.
- Chest tube placement may be needed.

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Research Concepts:

Moh'd Terbi

Empyema




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Question 272: A 16-year-old male presents to the emergency department with acute right scrotal pain following a fall in a football match. His symptoms came on rapidly 2 hours ago and were associated with nausea and vomiting. What is the most appropriate next step in management of this problem?

Choices:

1. Computed tomography scan
2. Immediate surgical scrotal exploration
3. Scrotal nuclear scan
4. Doppler sonography of the scrotum

Moh'd Terbi

Answer: 4 - Doppler sonography of the scrotum

Explanations:

- Although MRI and radionucleotide scrotal imaging both would likely confirm the likely diagnosis of acute testicular torsion, they are not the most appropriate modalities because they are not always immediately available. This can cause an unacceptable delay in definitive surgical intervention. Doppler sonography is usually the best imaging study for these cases as ultrasound is readily available and does not cause an inordinate delay in surgery.
- Doppler ultrasound sensitivity is reported to range between 96% to 100% with a specificity of between 84% to 95%. An attempt can be made for manual detorsion of the testicle. This involves manual rotation, clockwise for the left testicle, and counterclockwise for the right, similar to opening a book.
- With appropriate training, point-of-care ultrasound also may be used by a provider at the bedside. It allows for timely recognition of findings suggestive of testicular torsion, thereby preventing potential delays to definitive surgical intervention.
- Emergent surgical evaluation should never be significantly delayed by diagnostic imaging; however, when the clinical suspicion is sufficiently high, a brief delay is not unreasonable. Typically, this decision is made by the urologist or operating surgeon. In this case, the presumed torsion is only 2 hours old so there is plenty of time to get the ultrasound.

Michael Terbi

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Research Concepts:

Acute Scrotum Pain

StatPearls Knowledge Base

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Moh'd Terbi

Question 273: An 18-year-old male was in a motor vehicle collision, and 2 unit of whole blood were transfused at the emergency department of the nearest hospital. He was surgically treated and sent home under prescription. Two months after the accident he felt sick. He started complaining flu-like symptoms, fever and his family doctor found neck lymphadenopathy and a skin rash. What is the following step to follow this case?

Choices:

1. To perform an HIV test
2. To test for Venereal Disease Research Laboratory test (VDRL)
3. To hospitalize the patient for further studies
4. To treat with an antibiotic

Moh'd Terbi

Answer: 1 - To perform an HIV test

Explanations:

- This patient should be screened for HIV primary infection.
- HIV can transmit by blood transfusion and this patient has this history.
- The presence of flu-like symptoms, fever, lymphadenopathy and skin rash may suspect primary HIV infection.
- Influenza and other viral illness should be ruled out.

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Research Concepts:

Mohd Terbo

Transfusion Transmitted Disease




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Question 274: An outbreak of gastroenteritis occurred in the rural areas of Pakistan after food. The water in the camps is not distilled or chlorinated. Many persons living there got severe watery diarrhea and vomiting. Stool samples sent for analysis and a bacteria is isolated which has shooting star like motility pattern. Which of the following bacteria is most likely isolated from the stool specimen?

Choices:

1. Escherichia coli
2. Helicobacter pylori
3. Vibrio cholerae
4. Salmonella typhi

Moh'd Terbi

Answer: 3 - Vibrio cholerae

Explanations:

- Vibrio cholerae causes cholera, which is acquired by drinking water that has been contaminated with human feces.
- Cholera outbreaks usually occur in communities with poor sanitary systems. Even in developed countries, a breakdown in the sanitary systems by natural disasters such as floods or hurricanes may produce cholera outbreak. Infection with V. cholerae may result in simple colonization, mild gastroenteritis, or a severe often fatal watery diarrhea.
- Cholera is characterized by abrupt onset of watery diarrhea and vomiting. As the disease progresses, the stool becomes colorless and speckled with mucus (rice stool). The continuous fluid loss results in severe dehydration, metabolic acidosis, hypovolemic shock, and loss of potassium. This leads to cardiac arrhythmia and renal failure.
- Vibrio is a genus of curved, comma-shaped, non-encapsulated, gram-negative facultative rods with shooting-star motility.

Mon'd Terki

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Research Concepts:

Bacterial Gastroenteritis




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Question 275: A mother brings in her 4-day-old son because of increasing jaundice. The mother is a healthy 30-year-old who is blood type O positive and Coombs negative. She received adequate prenatal care, and all her prenatal labs were within normal limits, including negative group B-strep status. The neonate has been exclusively breastfed on demand about every 4 hours. His birth weight was 3500 g, and his current weight is 3100 g. He has had one stool a day and three wet diapers in the last 24 hours. Physical examination is within normal limits except for marked jaundice. The results of his blood tests include a total serum bilirubin level of 16 mg/dL, direct bilirubin level 0.8 mg/dL, hematocrit 55%, and a reticulocyte count 2.8%. What is the most likely mechanism of jaundice in this neonate?

Choices:

Monia Terlu

1. Maternal immunoglobulin G–mediated hemolysis
2. The presence of beta-glucuronidase in breast milk leading to increased enterohepatic circulation
3. Breastfeeding failure causing dehydration and increased enterohepatic circulation
4. The presence of pregnanediol in breast milk inhibiting bilirubin conjugation

Answer: 3 - Breastfeeding failure causing dehydration and increased enterohepatic circulation

Explanations:

- The infant in the vignette has breastfeeding jaundice, also referred to as breastfeeding failure jaundice, which typically presents in the first week of life and is related to inadequate breastfeeding.
- Inadequate feeding results in dehydration and increased enterohepatic circulation, allowing unconjugated bilirubin to reenter circulation and raising serum bilirubin concentration. Treatment involves improving the hydration status of the neonate by increasing the number of feedings to at least eight times a day or temporary formula/donor breast milk supplementation. Mother needs to be supported emotionally and encouraged to continue breastfeeding to avoid lactation and breastfeeding failure. In most cases, the bilirubin levels will return to normal within a few days of the intervention(s). Phototherapy may occasionally be required.
- It is, however, important to remember that breastfeeding jaundice is a diagnosis of exclusion and should only be considered once other common causes have been ruled out based on history, physical and laboratory investigations.
- IgG-mediated hemolysis is seen in hemolytic disease of the newborn due to blood group incompatibility. Pregnanediol and beta-glucuronidase are responsible for breast milk jaundice that usually presents after the first week of life.

Mehri Terbi

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Research Concepts:

Neonatal Jaundice




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Moh'd Terbi

Question 276: A 17-month-old male is evaluated in the clinic. He has short stature and speech delay. A patch of papules with a "pebbly" appearance is noted on his upper back, and his facial appearance is different from that of his parents or older sister in that his eyebrows and supraorbital ridge are more prominent. His mother also reports that he snores while sleeping, and he continually has secretions requiring frequent suctioning. Which of the following enzyme levels will be low in this patient?

Choices:

1. Galactosylceramidase
2. Iduronate-2-sulfatase
3. Acid sphingomyelinase
4. Alpha-L-iduronidase

Moh'd Terbi

Answer: 2 - Iduronate-2-sulfatase

Explanations:

- Hunter syndrome is also known as mucopolysaccharidoses (MPS) type II. It is a lysosomal storage disease caused by the absence of the enzyme iduronate-2-sulfatase. It is typically seen in males due to the gene's (IDS) location on the X-chromosome. Interestingly, Hunter syndrome is not seen in females, despite X-inactivation, due to the ability of the cells expressing the normal IDS allele to export the enzyme into the extracellular space. It can be picked up by cells that express the abnormal IDS allele and targeted to the lysosome appropriately.
- Physical manifestations include a "coarsening" of facial appearance usually beginning to be evident around 18 months. The deposition of storage material due to the lysosomal defect leads to peripheral storage with broad and rounded cheeks, macroglossia, progressive tracheal stenosis, carpal tunnel syndrome, spinal stenosis, and skeletal dysplasia with short stature. As seen in this patient, pebbly skin thickening is the most likely skin manifestation of Hunter syndrome and is pathognomonic. Macrocephaly and progressive cognitive deterioration are universal, even in those with bone marrow transplants. Increased aggressiveness and behavioral agitation are also seen in long-term disease.
- Treatment of this disease includes enzyme replacement therapy, which has been shown to help with fatigue, functional capacity, liver and spleen volumes, and deposition within the oropharynx contributing to sleep apnea. It does not help with cognitive impairment or significant tracheal and airway storage. Individuals with Hunter syndrome also have to be closely monitored for known complications.
- Galactosylceramidase is deficient in Krabbe disease. Acid sphingomyelinase is deficient in Neimann Pick disease. Alpha-L-iduronidase is deficient in MPS I or Hurler syndrome.

Mohit Tevi

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Research Concepts:

Mucopolysaccharidosis Type II

StatPearls Knowledge Base

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Moh'd Terbi

Question 277: A 16-year-old female presents for a well child check. She is obese with BMI in the 95th percentile for age. She has never been screened for diabetes mellitus (DM). She denies any symptoms. Further workup to determine if she has diabetes mellitus are ordered. Which of the following would be diagnostic of diabetes in this patient?

Choices:

1. Hemoglobin A1c of 6.0% or higher
2. Post glucose load blood sugar of 150 mg/dl 2 hours after ingestion
3. Random blood sugar of 200 mg/dl
4. Fasting plasma glucose of 130 mg/dl

Moh'd Terbi

Answer: 4 - Fasting plasma glucose of 130 mg/dl

Explanations:

- Hemoglobin A1C less than 5.7% is considered normal. 5.7% to 6.4% is considered "prediabetes" and 6.5% or higher is diagnostic of diabetes. An A1c of 6.0% would therefore not be diagnostic of DM.
- A 2-hour post oral glucose load of 200 mg/dl or higher is considered positive for DM.
- Random blood glucose of 200 mg/dl or higher in the setting of classic symptoms of polyuria, polydipsia, weight loss is diagnostic. This patient denies any symptoms. Therefore, this is not diagnostic.
- A fasting plasma glucose greater than 126 mg/dl is diagnostic of DM.

Mohd Terbi

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Research Concepts:

Pediatric Type 2 Diabetes Mellitus




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Question 278: A 17-year-old girl presents to a clinic for the evaluation of weight gain. She denies overeating but loves soft drinks, watches television 3-6 hours per night, and is active only in gym class at school. Her history is remarkable for infrequent dysphagias and easy fatiguability. The family history is positive for obesity and type 2 diabetes mellitus. She is not on any medications at present. Her menses are irregular, and the remainder of the review of systems is negative. On physical examination, her height is 149 cm (5th percentile), and her body mass index (BMI) is 40 (>95th percentile). She has a heart rate of 66 bpm and blood pressure of 110/70 mmHg. Her obesity is generalized with no evident masses. Her thyroid is not palpable. She has completed puberty, and the remainder of the examination is normal. After ruling out diabetes, what is the next best step in the management?

Choices:

Moh'd Terbi

1. Cortisol level test
2. Thyroid function tests
3. Random lipid profile test
4. Leptin level test

Answer: 2 - Thyroid function tests

Explanations:

- Almost all cases of ectopic thyroid are hypothyroid. Most of the findings in the scenario are indicating the hypothyroid state. The possibility of the ectopic thyroid should be at the top of the differential diagnosis because of the symptoms such as dysphagia, easy fatiguability, short stature, and an increase in weight, which is not related to the food intake are suggestive of a hypothyroid state.
- Hyperthyroidism is extremely rare and is found only in two reported cases of ectopic thyroid.
- The newborn screening can show abnormal tests in the majority of the cases of ectopic thyroid.
- Lifelong thyroxine is the definitive treatment in all symptomatic patients.

Moh'd Terbi

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Research Concepts:

Ectopic Thyroid




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Question 279: A 17-year-old female with a past medical history of asthma presents with right upper quadrant abdominal pain, nausea, and jaundice for two weeks. Laboratory analysis shows alanine aminotransferase of 1048 IU/L, aspartate aminotransferase of 1120 IU/L, alkaline phosphatase of 212 IU/L, and bilirubin of 4.1. INR is 2.1. She appears slightly confused and lethargic. Hepatitis C RNA by polymerase chain reaction (PCR) is not detected, HCV antibody is negative, hepatitis A IgM is positive, hepatitis B core antibody IgM is negative, hepatitis B core antibody IgG is positive, and hepatitis B surface antigen is negative. What is the next step in the management of this patient?

Choices:

1. Admit to the hospital and initiate liver transplantation evaluation
2. Discharge the patient home as she has an acute hepatitis infection which is a self-limited illness
3. Treat the patient for chronic hepatitis infection with oral lamivudine
4. Admit the patient to the hospital for intravenous fluids and close monitoring

Moh'd Terbi

Answer: 1 - Admit to the hospital and initiate liver transplantation evaluation

Explanations:

- This patient has acute hepatitis A as indicated by the positive hepatitis A IgM.
- Acute hepatitis A infection is typically a mild, uncomplicated, self-limited illness in a young and healthy patient. However, this patient meets the criteria for acute liver failure with coagulopathy and encephalopathy without preexisting cirrhosis and with an illness of 2 weeks' duration. Therefore, she should be admitted, and evaluation for liver transplantation should be initiated if she continues to decompensate clinically.
- Acute hepatitis B is diagnosed when patients have positive hepatitis B core antibody IgM plus or minus positive hepatitis B surface antigen.
- Patients with chronic hepatitis B will have persistent hepatitis B surface antigen positivity beyond six months' duration.

Mohit Terbi

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Research Concepts:

Hepatitis A




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Question 280: A 9-day-old female presents to the emergency department with recurrent vomiting after feeding for one day and irritability. Her parents report the infant was doing well after birth, and she had previously been breastfeeding well. She was born full-term by normal spontaneous vaginal delivery with a birth weight of 3.2 kg. Vital signs reveal a temperature of 37 C, heart rate of 180 beats/minute, respiratory rate of 50 breaths/minute, and blood pressure of 56/30 mmHg. On physical examination, the newborn appears dehydrated and irritable with dry mucous membranes and a sunken anterior fontanelle. There is labial and clitoral enlargement noted. Laboratory studies reveal the sodium 129 mEq/L, potassium 5.8 mEq/L, chloride 110 mEq/L, bicarbonate 24 mEq/L, and glucose 40 mg/dL. A 20 ml/kg fluid bolus of 0.9% normal saline is given. Of the following, what is the most appropriate next step in management for this patient?

Moh'd Tariq

Choices:

1. Intravenous hydrocortisone 100 mg/m2 per day
2. 20 ml/kg fluid bolus of 0.9% normal saline over 1 hour
3. Oral hydrocortisone, in three divided doses of 10 to 20 mg/m2 per day
4. Oral fludrocortisone 0.1 to 0.2 mg per day

Answer: 1 - Intravenous hydrocortisone 100 mg/m2 per day

Explanations:

- Congenital adrenal hyperplasia is the most common cause of adrenal crisis and insufficiency in infants.
- Acute adrenal crisis is a life-threatening condition, and treatment should be started immediately with normal saline bolus fluids followed by intravenous hydrocortisone.
- The intravenous stress dose of hydrocortisone at 100 mg/m2 per day should be administered as early as possible.
- Oral hydrocortisone and fludrocortisone are used for long-term management when the patient is out of the adrenal crisis.

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

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Research Concepts:

21 Hydroxylase Deficiency




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Question 281: A 17-year-old male is seen in the clinic for a suspected murmur. On auscultation, there is a rushing noise between the first and second heart sounds. The noise is quieter than S1 and S2 and best heard near the right upper sternum and is louder with the patient is supine. What should be included in the workup of this murmur?

Choices:

1. Patient should undergo an angiogram
2. Patient should be admitted for observation
3. Patient should have an EKG and echocardiogram performed as soon as possible
4. The patient should be followed but reassured that right now nothing needs to be done

Moh'd Terbi

Answer: 4 - The patient should be followed but reassured that right now nothing needs to be done

Explanations:

- This case represents a case of an innocent murmur. The patient should have normal follow-up and intervention only if the murmur worsens.
- If the murmur is grade 2 or less and systolic, it is most likely an innocent murmur.
- The grading of murmurs is as follows: grade 1 is barely audible; grade 2 is easily heard, about the same or less than the first and second heart sounds; grade 3 is easy to hear and greater than the first and second heart sounds and not associated with a thrill; grade 4 is easily heard with a thrill; grade 5 is easily heard, associated with a thrill, and able to auscultate with the stethoscope only lightly on the chest (just the rim of the stethoscope is on the chest); grade 6 is easily audible, associated with a thrill, and still heard with the stethoscope off of the chest.
- Any other workup would be required if the murmur was not innocent. This would likely include an EKG and echocardiogram at a minimum.

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Research Concepts:

Innocent Murmur



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Question 282: The patient is a 17-year-old female with no significant past medical history. She presented to the emergency room with a 3-week history of progressively worsening pain, erythema, and swelling of her right index finger. She denies any trauma, fever or chills. She tried soaking her finger in Epsom salt without any improvement in her symptoms. On examination her vitals are stable, the right index finger was swollen, tender to palpation but no discharge or ulceration noted. Laboratory data do not show any leukocytosis. X-ray of the right-hand shows soft tissue swelling and some periosteal erosion at the distal phalanx of the right index finger suggestive of osteomyelitis. She was started on empiric broad-spectrum antibiotic treatment and underwent incision and drainage of the right index finger by orthopedic surgery. What is the recommended duration of antibiotics for the treatment of osteomyelitis in this patient?

Moh'd Terbi

Choices:

1. Stop all antibiotics since she already had an incision and drainage of the index finger.
2. 1 to 2 weeks
3. 4 to 6 weeks
4. 10 weeks

Answer: 3 - 4 to 6 weeks

Explanations:

- It is generally recommended to complete a 4 to 6-week course of parenteral antibiotics for the treatment of osteomyelitis.
- Broad spectrum empiric antibiotic regimens in use have activity against common gram-negative and gram-positive organisms including methicillin-resistant Staphylococcus aureus.
- Pathogen-specific antibiotic therapy should commence once data from culture and sensitivity are known.
- A shorter duration of antibiotics such as two weeks is acceptable in cases where the infected bone is wholly debrided or amputated with disease-free margins documented.

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Moh'd Terbi

Research Concepts:

Osteomyelitis




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Question 283: A young male complains of back pain that is improved with exercise. He has no history of gastrointestinal illness or symptoms of urethritis. On exam, he is found to have restricted lumbar mobility, tenderness of sacroiliac joints, and an x-ray showing sacroiliac sclerosis. Which of the following is true?

Choices:

1. His symptoms are most likely due to lumbar strain
2. His rheumatoid factor will be positive
3. He likely experiences prolonged morning stiffness
4. Radiographic changes in sacroiliac joints are asymmetric

Moh'd Terbi

Answer: 3 - He likely experiences prolonged morning stiffness

Explanations:

- This patient likely has a spondyloarthropathy as suggested by back pain that is improved with exercise, and it is most likely ankylosing spondylitis.
- Sacroiliac sclerosis is symmetric on x-ray.
- The age of onset is late teens to forties, and it is an inflammatory condition characterized by insidious onset of back pain, morning stiffness longer than 30 minutes, alternating buttock pain, and pain that awakens a person late at night.
- Rheumatoid factor is negative in spondyloarthropathies, which also includes reactive arthritis and psoriatic arthritis.

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Moh'd Terbi

Research Concepts:

Ankylosing Spondylitis




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Question 284: A 16-year-old male with a history of cystic fibrosis presents to the emergency department complaining of fever, dyspnea, chest pain, and cough with brown sputum. Chest x-ray shows pulmonary infiltrates in the upper lobes with dilated and thickened airways. Blood work was done and was significant for an IgE level >1000 IU/ml. The diagnosis is made and he is put on appropriate treatment. The first-line treatment for this condition increases the risk of which of the following?

Choices:

1. Osteoporosis
2. Renal stones
3. Mitral stenosis
4. Stroke

Moh'd Terbi

Answer: 1 - Osteoporosis

Explanations:

- This patient with cystic fibrosis presenting with fever, chest pain, brown sputum and evidence of bronchiectasis on chest x-ray (dilated airways) likely developed allergic bronchopulmonary aspergillosis. Allergic bronchopulmonary aspergillosis develops due to a hypersensitivity reaction against antigens to the fungus Aspergillus, which colonizes the airways. It almost exclusively happens in patients with a history of asthma or cystic fibrosis.
- The diagnosis of ABPA, as per the International Society for Human and Animal Mycology (ISHAM), is divided into predisposing conditions, obligatory criteria and other criteria. Predisposing conditions (at least one must be present for diagnosis): asthma or cystic fibrosis. Obligatory criteria (both must be present for diagnosis): a positive Aspergillus skin test or detectable anti-Aspergillus fumigatus IgE and an IgE > 1000IU/ml.
- Systemic glucocorticoids ios the primary treatment for acute ABPA. Steroids resolve the symptoms, reduce pulmonary inflammation, resolves the infiltrates and prevents irreversible lung damage. It also lowers serum IgE and peripheral blood eosinophils. There have been different approaches to using antifungals in the treatment of acute ABPA. Some recommend using antifungals in the initial treatment of acute APBA along with steroids and some only use it when the patient fails to taper oral steroids or have an exacerbation of ABPA. Antifungals act to decrease the fungal load thus reducing the antigenic stimulus for the hypersensitivity reaction. Nevertheless, steroids are considered the mainstay of treatment of acute ABPA.
- Glucocorticoids are associated with significant side effects. Of the answer choices, osteoporosis is a known side effect of long term usage of glucocorticoids. They are not known to increase the risk of renal stones. The cardiac side effects don't include

Monica Terlin

mitral stenosis and the neurological side effects don't include stroke.

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Research Concepts:

Allergic Bronchopulmonary Aspergillosis




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Question 285: A 17-year-old male presents with urethral discharge and dysuria. On examination, there is no obvious discharge. Urinalysis is positive for trace leukocyte esterase. Gram stain is negative for diplococci. What is the most likely diagnosis?

Choices:

1. Gonococcal urethritis
2. Epididymitis
3. Nongonococcal urethritis
4. Prostatitis

Moh'd Terbi

Answer: 3 - Nongonococcal urethritis

Explanations:

- Symptoms of dysuria and urethral discharge without gram-negative diplococci (Gonorrhea) indicate a diagnosis of nongonococcal urethritis.
- Urethritis is classically divided into two categories, gonococcal and non-gonococcal. Gonococcal urethritis is identified when gram stain shows gram-negative diplococci. A negative gram stain or any other test for gonorrhea is diagnostic of non-gonococcal urethritis.
- Epididymitis typically presents with scrotal swelling and pain, typically unilateral and developing over several days. Patients can also have dysuria and discharge on exam, but these are usually not the sole presenting features.
- Prostatitis typically presents with perineal or rectal pain. Patients also typically present with fever, chills, and malaise. They may also have dysuria, but this would not be the sole presenting feature.

Mehdi Terbi

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Research Concepts:

Nongonococcal Urethritis




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Question 286: A chest x-ray of a 14-year-old male for evaluation of tuberculosis shows a hyperlucent appearance of the right hemithorax. Physical examination demonstrates asymmetry of the right pectoralis muscle when compared to the left, a retracted upper lip, and mild wheezing. What else must be thoroughly examined in this patient?

Choices:

1. Legs to rule out varicose veins
2. Heart to rule out aortic insufficiency
3. Eyes to rule out extraocular motor dysfunction
4. Hearing to rule out sensorineural hearing loss

Moh'd Terbi

Answer: 3 - Eyes to rule out extraocular motor dysfunction

Explanations:

- Individuals with Poland syndrome typically present with congenital unilateral underdevelopment of the chest wall and pectoralis muscles. The right side is more often involved than the left. Severe disease can present with ipsilateral upper extremity abnormalities such as webbed digits.
- Poland syndrome and Mobius syndrome have a well-described association and are often termed the cognate Poland-Mobius syndrome.
- Extraocular muscle movement must be confirmed in excluding an associated Mobius syndrome when patients present with Poland syndrome. Other manifestations of Mobius syndrome include clubbed feet, strabismus, and wheezing or dyspnea.
- Palsy of the extraocular muscles will require referral to an ophthalmologist especially in the setting of coexistent strabismus.

Wahida Terbi

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Research Concepts:

Poland Syndrome




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Question 287: An 11-year-old male presents with fever, cough, and subsequent development of vesicles and small bullae on the arms that spread to the face, lips, and oral gingiva. A chest x-ray demonstrates atypical pneumonia prompting a diagnosis of Mycoplasma pneumoniae-induced rash and mucositis (MIRM). According to the current evidence, which is the best first-line agent for outpatient treatment of presumed atypical pneumonia caused by M. pneumoniae in the pediatric patient?

Choices:

1. Levofloxacin
2. Doxycycline
3. Azithromycin
4. Cefuroxime

Moh'd Terbi

Answer: 3 - Azithromycin

Explanations:

- A macrolide antibiotic is a first-line agent for presumed atypical pneumonia, which is often found concurrently with the rash of MIRM.
- Specific outpatient options include oral azithromycin 10 mg/kg on day 1, followed by 5 mg/kg/day once daily on days 2 to 5 to a maximum of 500 mg on day 1, followed by 250 mg on days 2 to 5.
- Oral clarithromycin, erythromycin, and doxycycline are all second-line treatment options that may be considered in certain patient populations.
- In addition to antibiotics, all patients with MIRM warrant supportive care, pain control for skin lesions and oral ulcerations with “magic mouthwash” solution or sucralfate, mucosal care, and correction of any fluid and nutritional deficiencies due to decreased oral intake.

Mon'd Terbi

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Research Concepts:

Mycoplasma Mucositis




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Question 288: A 17-year-old male athlete is found to have an accessory pathway on an electrocardiogram and is diagnosed with Wolff-Parkinson White (WPW) syndrome. What arrhythmia is the athlete most at risk of developing?

Choices:

1. Torsades de pointes
2. Supraventricular tachycardia
3. Ventricular fibrillation
4. Atrial tachycardia

Moh'd Terbi

Answer: 2 - Supraventricular tachycardia

Explanations:

- WPW can induce supraventricular tachycardia (SVT), and hence specific drugs must be avoided.
- Adenosine and specific calcium channel blockers must be avoided in WPW.
- Procainamide may be used in medically treating WPW syndrome.
- Not all accessory pathways are WPW and may be a result of another preexcitation syndrome.

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Research Concepts:

Sudden Death in Athletes




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Question 289: A 3-year-old male with an unremarkable past medical history presents accompanied by his mother for complaints of a dry, pruritic rash appearing on the neck and back. The child has also experienced watery, non-bloody diarrhea of 2 days duration although the parents have been successfully hydrating him on oral hydration solutions. On physical exam, the child appears well nourished and in no acute distress. Abdomen sounds are hyperactive, and the abdomen is nontender to palpation. There is a diffuse patch of dry skin on the upper back, extending to the right side of the neck. There are evident linear excoriation with some scabbing. The mother thinks this is due to an egg allergy since the symptoms started one day after consuming baked caked containing eggs. What is the likely reason why this would not be a case of egg allergy?

Choices:

Mcat Tern

1. True egg allergy presents with anaphylaxis in addition to eczema
2. Eczema presented beyond 1 year of age
3. Consumption of baked eggs does not lead to an allergic response
4. Eczema associated with egg allergy is not accompanied by gastrointestinal symptoms.

Answer: 2 - Eczema presented beyond 1 year of age

Explanations:

- Egg allergy is associated with gastrointestinal disturbance such as vomiting or diarrhea in addition to urticaria. In some cases, it can also lead to life-threatening anaphylaxis.
- Anaphylaxis is an IgE-mediated reaction that presents with a profound vasodilatory response, leading to hypotension and subsequent tissue hypoperfusion (i.e. shock).
- Baked eggs can still provide an allergic response due to inconsistent heating.
- Although eczema is associated with egg allergy, eczema presenting after one year of age is not likely due to egg allergy.

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Research Concepts:

Egg Allergy




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Question 290: A 10-day-old male presents to the emergency department with a fever. Lumbar puncture results are significant for leukocytosis with a lymphocytic predominance, above normal protein count, and normal glucose level. The patient is started on the appropriate intravenous medication. Which of the following is a significant potential side effect of this medication?

Choices:

1. Leukocytosis
2. Acute kidney injury
3. Constipation
4. Worsening of fever

Moh'd Terbi

Answer: 2 - Acute kidney injury

Explanations:

- Acute kidney injury is the most significant side effect of parenteral acyclovir administration (used for this patient's likely viral meningitis/encephalitis).
- The incidence of acute kidney injury in patients taking acyclovir is comparable to other nephrotoxic medications such as aminoglycosides.
- Patients with chronic kidney disease are at higher risk.
- Dose adjustment according to ideal body weight and baseline renal function is imperative. Seizure, massive hemorrhage, and worsening of fever are not significant side effects of acyclovir.

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

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Research Concepts:

Acyclovir




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Question 291: A 9-month-old infant presents with a gradual onset of decreased appetite, pallor, and poor weight gain. Physical examination reveals hepatosplenomegaly. A CBC shows a severe microcytic, hypochromic anemia with target cells and frequent nucleated red cells on the blood smear. The lead level and iron studies are within reference ranges. What is the best next test to order?

Choices:

1. Bone marrow biopsy
2. Hemoglobin electrophoresis
3. Peripheral blood flow cytometry
4. Serum erythropoietin level

Moh'd Terbi

Answer: 2 - Hemoglobin electrophoresis

Explanations:

- Beta thalassemia major first presents as early as 6 months of age when fetal hemoglobin production normally ceases.
- Hemoglobin electrophoresis will show nearly absent to completely absent HbA with greater than 95% fetal hemoglobin and variably increased HbA2.
- Severe, chronic anemia causes extramedullary hematopoiesis in the liver and spleen. This explains the physical exam finding of hepatosplenomegaly and the laboratory finding of nucleated red blood cells.
- Hemoglobin electrophoresis is the best test for making a diagnosis of beta thalassemia. The CBC and blood smear findings suggest thalassemia, but they are nonspecific and require further workup.

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Research Concepts:

Beta Thalassemia




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Question 292: A 17-year old baseball player develops an acute onset of pain in his right arm after practice. On exam, he has significant swelling with distended neck veins. He has no previous medical problems. Which of the following is the most likely diagnosis?

Choices:

1. Paget-Schroetter syndrome (PSS)
2. Lymphedema
3. Secondary upper extremity deep venous thrombosis
4. Superior vena cava (SVC) syndrome

Moh'd Terbi

Answer: 1 - Paget-Schroetter syndrome (PSS)

Explanations:

- PSS is an acute thrombosis of the subclavian vein resulting from compression of the vein at the thoracic outlet. It occurs in young healthy patients involved in activities requiring repetitive upper extremity motion.
- Lymphedema occurs in about 10% of patients undergoing axillary dissection after breast surgery.
- A secondary upper extremity deep venous thrombosis (DVT) is related to previous instrumentation of the central veins, especially catheterization with a central line, peripherally inserted central catheter (PICC) line, or pacemaker.
- Superior vena cava (SVC) syndrome may occur in patients with non-small cell lung cancer. Lung cancer would be unusual for a young patient without any history or exam findings to suggest underlying malignancy.

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Research Concepts:

Upper Extremity Deep Venous Thrombosis




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Question 293: A 17-year-old male patient with a history of intravenous drug use complains of a few days history of pain in his left arm, double vision, fever, and difficulty swallowing. He is awake, alert, and oriented to person, place, and time and denies any headache or neck stiffness. Exam shows a blood pressure of 110/81 mmHg, a temperature of 37.4 C (99.3 F), heart rate of 110 beats/min, and respiratory rate of 18/min. Kernig and Brudzinski tests are negative. A large erythematous, warm, and indurated rash on the left arm is noted with several track marks and pustular lesions. Cranial nerves II through XII are grossly intact, and the bladder is distended. Which of the following is the next best step in managing this patient?

Choices:

1. CT head, antibiotics, and admission to a medical floor
2. Antitoxin, antibiotics, and admission to a medical floor
3. Antitoxin, antibiotics, and admission to the intensive care unit
4. CT head, lumbar puncture, antibiotics, and admission to the medical floor

Mehdi Terbi

Answer: 3 - Antitoxin, antibiotics, and admission to the intensive care unit

Explanations:

- The description is classic for wound botulism, most likely from Clostridium botulinum cellulitis secondary to subcutaneous injection of spores from contaminated drugs.
- Respiratory failure may occur suddenly, thus the admission to intensive care.
- Botulism can be acquired through exposure to the pre-formed toxin via improperly-stored food, iatrogenic injection, or bioterrorism, or it can result from the systemic release of the toxin in vivo, as in the cases of infant and wound botulism.
- Antitoxin should be administered as soon as botulism is suspected. Antibiotics for wound botulism include penicillin or metronidazole if penicillin-allergic.

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Research Concepts:

Botulism




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Question 294: A 16-year-old female with a past medical history of atopic dermatitis presents to the office with her parents for a rash. She says she has had red bumps on her arms and legs for a few years, but they seem to be worsening. She denies pain and pruritus but is extremely distressed about her appearance. Vital signs are within normal limits. On physical exam, the patient has papules with follicular involvement and surrounding erythema on the extensor surfaces of her proximal upper and lower extremities. Which of the following is a possible treatment for this patient?

Choices:

1. Bleach bath
2. Methotrexate
3. 20% urea cream
4. Cryotherapy

Moh'd Terbi

Answer: 3 - 20% urea cream

Explanations:

- Keratosis pilaris can be treated with a topical keratolytic such as 20% urea cream or 6% salicylic acid cream.
- Emollients, topical anti-inflammatories, vitamin D3 derivatives, retinoids, phototherapy, and laser treatments are also available treatment options.
- Treatments are usually for cosmetic purposes only as the condition itself is known to be harmless.
- The condition generally improves over time.

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Research Concepts:

Keratosis Pilaris




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Question 295: A 1-year-old female presents with episodic abdominal pain for 1 day, anorexia, and loose stools. She has no fever or upper respiratory symptoms. On physical exam, her abdomen is soft and non-tender but her stools are bloody and the hemoccult test is positive. Of the following, which radiologic study would be best used to confirm the suspected diagnosis?

Choices:

1. CT with contrast of the abdomen
2. Ultrasound
3. X-ray
4. MRI of the abdomen, with and without contrast

Moh'd Terbi

Answer: 2 - Ultrasound

Explanations:

- This patient has suspected intussusception given the episodic abdominal pain and heme-positive stools.
- Though CT, MRI, or x-ray could either identify or help identify intussusception, ultrasound is a much easier, less invasive, and less expensive modality. The sensitivity and specificity reach nearly 100% in institutions with well-trained ultrasonographers.
- Some surgeons will elect to go with a contrast enema when the suspicion of intussusception is high. The technique is both diagnostic and therapeutic.
- Contrast enema usually is not recommended for children older than 3 years, as most of these children have a surgical lead point.

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Research Concepts:

Child Intussusception




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Question 296: A child is born with micrognathia and cleft lip and palate. His tongue is normal in size. A chest x-ray shows the absence of a thymic silhouette. A maternal uncle is known to have the same condition. Which of the following is most likely associated with this condition?

Choices:

1. Café-au-lait skin lesions
2. Pierre-robin sequence
3. Truncus arteriosus
4. Atrial septal defect

Moh'd Terbi

Answer: 3 - Truncus arteriosus

Explanations:

- This child exhibits characteristics of 22q11. 2 deletion syndrome (DiGeorge syndrome). The child has micrognathia, cleft lip and palate, and absent thymus. DiGeorge syndrome is caused by a genetic mutation in the 22q11 gene.
- About 80% of patients with 22q11. 2 deletion syndrome also will have a cardiac defect.
- Cardiac lesions in 22q11. 2 deletion syndrome include truncus arteriosus and tetralogy of Fallot.
- 22q11 microdeletions have been detected in 25 to 50% of patients with conotruncal abnormalities.

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Moh'd Terbi

Research Concepts:

Truncus Arteriosus




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Question 297: A 4-month-old male infant is brought to the clinic by his mother for a routine visit. The mother is concerned about her baby not being able to breastfeed long enough and falling asleep early. She noticed this change for the last month. The father of the baby has a long-standing history of anemia of unknown etiology and family history is positive for chronic anemia, short stature, and congenital thumb abnormalities. Complete blood count shows macrocytic red blood cells with hemoglobin of 7 g/dL, and normal white blood cell count and platelets. Reticulocytes are low, and adenosine deaminase (ADA) level is high. Which of the following is the next best step in the management of this patient?

Choices:

1. Bone marrow biopsy
2. Hemoglobin F level testing
3. Corticosteroids
4. Bone marrow transplantation

Moh'd Terbi

Answer: 1 - Bone marrow biopsy

Explanations:

- The patient most likely has Diamond-Blackfan anemia (DBA). Bone marrow biopsy should be done first to confirm the diagnosis before starting treatment.
- Diamond Blackfan anemia (DBA) is a congenital type of anemia, which is characterized by pure red cell aplasia, associated with congenital bone abnormalities.
- It is a heterogeneous genetic disease, which is inherited as an autosomal dominant inheritance in 40%-45% of cases and presents sporadically in 55%-60% of the cases.
- Hemoglobin F is elevated in DBA but it would not help confirm the diagnosis. Corticosteroids are the first-line treatment for DBA. However, a diagnosis should be confirmed first. Bone marrow transplantation is a third-line treatment for DBA after steroids and blood transfusion.

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Research Concepts:

Diamond Blackfan Anemia




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Question 298: A 5-year-old girl presents to the clinic with her parents with complaints of bloody diarrhea, abdominal pain, and pallor. Her parents also report a 3-year history of recurrent pneumonia, which typically resolves with antibiotic or anti-fungal medications. Her laboratory results show signs of malabsorption and anemia. Liver and thyroid functions test are normal. A dihydrorhodamine test is abnormal. Chronic granulomatous disease is strongly suspected. Given the patient's likely diagnosis, with what condition are her gastrointestinal symptoms are most similar?

Choices:

1. Celiac disease
2. Colon cancer
3. Gastric ulcers from a Helicobacter pylori infection
4. Inflammatory bowel disease

Moh'd Terbi

Answer: 4 - Inflammatory bowel disease

Explanations:

- A small subset of patients suffering from chronic granulomatous disease (CGD) experiences gastrointestinal symptoms similar to symptoms seen in inflammatory bowel disease (IBD), especially Crohn disease.
- Symptoms can include mild to bloody diarrhea and malabsorption. Granulomata in CGD IBD have sharply defined histiocyte aggregates with surrounding lymphocytic inflammation, unlike the poorly formed granulomata often seen in Crohn disease.
- The CGD genotype seems to accentuate the standard genetic risk associated with IBD. Recent studies suggest that there may also be a relationship between discoid lupus erythematosus with female carriers of X-linked CGD.
- While patients with CGD granulomatous colitis respond well to tumor necrosis factor-alpha inhibition, such as infliximab, they often have significant infectious complications, sometimes fatal. This is more common than typical patients with Crohn disease.

Mohit Tekri

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Research Concepts:

Chronic Granulomatous Disease




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improvement.

Moh'd Terbi

Question 299: A 10-year-old female presents to your office with her father for fatigue and weakness for 3 months. Her vitals include a temperature of 37.2 C, blood pressure 120/80 mmHg, heart rate 90 beats/min, and respiratory rate 18/min. Additional exam findings include four dark blue to brown pigmented macules on her lips, oral mucosa, and fingertips similar to the lesions on her father's lips. What laboratory test should be ordered?

Choices:

1. Liver function test
2. CBC
3. Lipid panel
4. Hemoglobin A1C

Moh'd Terbi

Answer: 2 - CBC

Explanations:

- Complications due to the hamartomas in Peutz-Jeghers syndrome (PJS) include intussusception or obstruction of the gastrointestinal lumen by the polyps and chronic bleeding. Consider ordering a CBC to evaluate for anemia in patients with PJS.
- Patients with PJS may develop gastrointestinal polyposis as early as 10 years of age, with the small intestine being the most common site.
- PJS is an autosomal dominant inherited disorder. It most often is due to germ-line mutations in the STK11 (LKB1).
- The STK11 (LKB1) gene in PJS is on chromosome 19p13.3. The gene encodes for serine/threonine kinase 11.

Mohd Terbi

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Research Concepts:

Peutz-Jeghers Syndrome




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Question 300: A 12-week-old male patient who was born at 32 weeks gestation is brought in with perioral crusty plaques with distinct margins that are also on other parts of the face. The infant has been irritable. Moreover, he has diarrhea and areas of alopecia. Which of the following is the best treatment?

Choices:

1. Oral corticosteroids
2. Oral zinc supplements
3. Oral vitamin C supplements
4. Topical antifungal

Moh'd Terbi

Answer: 2 - Oral zinc supplements

Explanations:

- Premature infants are at risk for zinc deficiency due to decreased stores and the absence of zinc in hyperalimentation.
- Zinc deficiency can cause diarrhea, dermatitis, and irritability.
- Acrodermatitis enteropathica is a genetic disorder with impaired zinc absorption.
- Zinc deficiency is diagnosed by measuring plasma zinc levels. Because alkaline phosphatase is a zinc-dependent enzyme, reduced levels of alkaline phosphatase may indicate a zinc deficiency.

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Moh'd Terbi

Research Concepts:

Zinc Deficiency




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Section 4

Question 301: A 7-year-old, unimmunized male presents to the healthcare provider with a coalescing pseudomembrane over the oropharynx. A culture grows Corynebacterium diphtheriae. His 5-year-old sister is also unimmunized. What is the best step to preventing the same infection in the younger sibling?

Choices:

1. Prophylaxis with benzathine penicillin G and a booster dose of DTaP
2. A booster dose of DTaP only
3. Oral cefixime for seven days
4. Reassurance

Moh'd Terbi

Answer: 1 - Prophylaxis with benzathine penicillin G and a booster dose of DTaP

Explanations:

- For close contacts, a diphtheria booster, appropriate for age, should be given to the contact. They should also receive benzathine penicillin G (600,000 units for persons younger than six years old and 1,200,000 units for those six years old and older).
- The patient should receive both diphtheria booster as well as antimicrobial prophylaxis.
- A 7-10 day course of oral erythromycin (40 mg/kg/day for children and 1 g/day for adults) can be given in lieu of benzathine penicillin.
- The sibling should definitely receive antibiotics and diphtheria booster in addition to proper counseling of parents.

Mon'd Terbi

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Research Concepts:

Diphtheria




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Question 302: A 17-year-old female presents to the emergency department with left-sided eye discharge for the past few days. She reports no sick contacts. She does not wear contact lenses. She denies any medical history. She is sexually active with multiple male partners and reports that her last sexual engagement was oral sex approximately 2 weeks ago. She gets sexually transmitted infection testing regularly, with a negative urine screening about 1 week ago. Vitals are stable. On exam, visual acuity is 20/20 bilaterally. Her left upper eyelid is swollen, erythematous, and positive for mucopurulent discharge. She has a conjunctival injection of the left eye. Extraocular movements are intact without significant pain bilaterally. There are no other positive exam findings. Which of the following treatments would be appropriate for this patient?

Choices:

1. Oral erythromycin
2. Moxifloxacin ophthalmic drops
3. Polymyxin B/trimethoprim ophthalmic drops
4. Intramuscular ceftriaxone

Moh'd Terbi

Answer: 4 - Intramuscular ceftriaxone

Explanations:

- While typically a disease of neonates, gonococcal conjunctivitis due to Neisseria gonorrhoeae should be considered in sexually active patients with ocular symptoms.
- The Centers for Disease Control and Prevention recommends dual therapy for gonococcal conjunctivitis including ceftriaxone and azithromycin or doxycycline for possible chlamydial infection. Patients infected with Neisseria gonorrhoeae are frequently co-infected with Chlamydia trachomatis.
- The recommended dosing is ceftriaxone 1 g intramuscularly
- Polymyxin B/trimethoprim, moxifloxacin, and erythromycin would not be ideal choices because these agents do not cover N. gonorrhoeae or C. trachomatis, especially in a patient with pertinent risk factors.

Moh'd Terbi

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Research Concepts:

Gonococcal Conjunctivitis




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Question 303: A teenager was hit in the head during a football game. He lost consciousness for more than a minute and was managed in the emergency room. He has a Glasgow coma scale of 15 and is alert. He would like to return to school. He is told to rest first. However, he would like to know if he can take acetaminophen for his headache and for how long. What should he be told?

Choices:

1. Acetaminophen should not be taken in head trauma patients
2. Take it for no more than 3 days
3. Use morphine instead
4. Take acetaminophen every 4 hours instead of every 6 hours

Moh'd Terbi

Answer: 2 - Take it for no more than 3 days

Explanations:

- In general patients with head trauma should not be given any type of sedative or sleeping pill.
- Acetaminophen is preferred for headaches because it is not sedating. At the same time, one can also use heat, ice, and massage to get neck pain relief.
- To limit light sensitivity, one may need sunglasses, melatonin for sleep, and ondansetron for any emesis.
- The acetaminophen should only be used for 3 days. If the headaches persist, the patient should be investigated. Prolonged acetaminophen can mask serious problems in the brain.

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Moh'd Terbi

Research Concepts:

Blunt Head Trauma




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Question 304: A 17-year-old male with no known past medical history comes to the emergency department complaining of shortness of breath, lightheadedness, and palpitations that have progressively worsened during the last three days. He lives in Connecticut and frequently goes hiking, last time one month ago. He recalls having found a tick in his inner thigh on his last trip. He later developed a circular red lesion with central clearing and subsequently fever, chills, malaise, and myalgia. Symptoms lasted for seven days and resolved on their own. On this visit, an electrocardiogram done in the emergency department showed a second-degree type 2 atrioventricular block. What is the best next step in the management of this patient?

Choices:

1. Enzyme-linked immunosorbent assay
2. Discharge home with oral doxycycline for 14 days and closely follow-ups
3. Admit patient and immediate treatment with intravenous ceftriaxone
4. Immunoblot to detect IgM and IgG antibodies against Borrelia burgdorferi

Med'd Terbi

Answer: 3 - Admit patient and immediate treatment with intravenous ceftriaxone

Explanations:

- Admission to the hospital for continuous telemetry monitoring is warranted in patients with high degree atrioventricular block due to the risk of rapid change in block severity.
- In patients with high suspicion for moderate or severe Lyme carditis based on demographic factors, history, and physical exam, the best next step is to start intravenous IV antibiotics immediately.
- Patients with mild disease can be discharged with oral doxycycline or amoxicillin for 14 to 21 days.
- A two-step method of serologic testing, including enzyme-linked immunosorbent assay (ELISA) followed by Immunoblot to detect Ig M and IgG antibodies, is the approach to follow in patients with ambiguous manifestations.

Mon'd Terbi

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Research Concepts:

Lyme Carditis




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Question 305: A 14-year-old male presents to a healthcare clinic. He has been wheelchair-bound since 12 years of age. He has severe scoliosis and follows up with the cardiology clinic. Examination reveals enlargement of the muscles of the tongue and calf. Gene analysis will reveal an abnormality in coding for which protein?

Choices:

1. Dystrophin
2. Alpha-1 anti-trypsin
3. Fibrillin
4. Dynein

Moh'd Terbi

Answer: 1 - Dystrophin

Explanations:

- Dystrophin is the muscle protein formed in Duchenne muscular dystrophy (DMD) associated with abnormal muscle function.
- Patients with DMD demonstrate a complete or near complete absence of dystrophin gene. Polymerase chain reactions (PCR) can be used and detect up to 98% of mutations.
- Deletions and duplications account for 70% to 80% of the mutations. Point mutations are seen in 20% to 30% of patients.
- The dystrophin gene is one of the largest genes in the human genome. Containing 79 exons of coding sequence and 2.5 Mb of DNA, this gene codes for the protein dystrophin measuring 427 kDa.

Mahdi Terbi

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Research Concepts:

Duchenne Muscular Dystrophy




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Question 306: A 13-year-old boy presents with very itchy flesh-colored nodules with excoriations on his shins. He had very dry skin with pruritus and lichenification of the flexors. Blood tests reveal serum IgE levels 1400 kUA/L. Which of the following best identifies the two skin conditions most likely present in this patient?

Choices:

1. Lichen simplex chronicus and ichthyosis vulgaris
2. Lichen planus and atopic dermatitis
3. Prurigo nodularis and atopic dermatitis
4. Impetigo contagiosa and psoriasis vulgaris

Moh'd Terbi

Answer: 3 - Prurigo nodularis and atopic dermatitis

Explanations:

- Prurigo nodularis is a chronic, intensely pruritic nodular condition usually found on the lower extremities, though it can occur anywhere on the body. It has been associated with atopic dermatitis. In patients with atopic dermatitis, the lesions of prurigo nodularis can appear early in life.
- Pruritus, as a symptom is present in many diseases. Patients with atopic dermatitis are predisposed to a higher sensitivity or lower tolerance to pruritus, developing chronic prurigo response under the influence of itch-scratch-cycle.
- The intensely pruritic nodules on the shin are a characteristic clinical feature of prurigo nodularis. The raised levels of serum IgE and clinical symptoms of generalized dryness and flexural dermatitis indicate atopic dermatitis in this patient.
- Prurigo nodularis and atopic dermatitis have been associated together due to the common mechanisms and mediators of pruritus.

Mohamed Terbi

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Research Concepts:

Prurigo Nodularis




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Question 307: A mother brings her 25-day-old male son to the emergency department to be evaluated. She says that he has a fever of 102 F taken rectally over the last 6 hours. He is also very irritable and has not been eating or producing urine. He is breastfed. Besides cerebral spinal fluid analysis, what other lab tests can be utilized to confirm a Listeria monocytogenes infection?

Choices:

1. Listeriolysin O antibody assay
2. Western blot test for Listeria
3. Cellular electrophoresis
4. Complete blood count with differential

Moh'd Terbi

Answer: 1 - Listeriolysin O antibody assay

Explanations:

- Listeria is a gram-positive rod and is a facultative anaerobe.
- Listeria causes meningitis in young, old, and immunocompromised.
- Testing for Listeria monocytogenes infection includes culture of the bacteria as well as a listeriolysin O antibody assay.
- Listeria can be found in unpasteurized milk, cold deli meats, and soft cheeses.

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Research Concepts:

Moh'd Terbi

Listeria Monocytogenes




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Question 308: A 3-year-old boy presents with a one-week history of severe sore throat and fever. The patient's voice is normal, but he prefers not to speak due to pain. He has not been able to eat solid food for two days and has refused to drink for one day. There is marked swelling of the posterior pharynx but no palatal edema or tonsillar exudate or asymmetry. There is pain with neck movement. What is the most likely etiology of this patient's condition?

Choices:

1. A complication of periodontal disease
2. A complication of an upper respiratory infection
3. A complication of acute tonsillar infection
4. A complication of sialadenitis

Moh'd Terbi

Answer: 2 - A complication of an upper respiratory infection

Explanations:

- The most likely diagnosis is a retropharyngeal abscess, which commonly presents in children 2-4 years of age.
- In a child presenting with retropharyngeal abscess, the most common etiology is thought to be the progression of lymphadenitis of the retropharyngeal lymph nodes secondary to upper respiratory infection.
- Tonsillitis can progress to peritonsillar or parapharyngeal rather than a true retropharyngeal abscess. The clinical presentation can be similar, but this patient demonstrates no evidence of tonsillar involvement. A "hot-potato" voice may be seen in any of these deep neck space infections.
- Treatment may consist solely of intravenous antibiotics, but larger infections (>2-3 cm in diameter), particularly when threatening the airway, will require surgical drainage.

Mehri Terbi

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Research Concepts:

Retropharyngeal Abscess




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Question 309: A female presents to the emergency department with a finger injury. She was bowling when a teammate dropped a 7 kg ball on her hand. There is an obvious deformity to the left hand at the 4th and 5th fingers. Her 4th and 5th fingers have nails that are 100% effaced with a subungual hematoma. Which of the following is the most appropriate sequence of management steps?

Choices:

1. Anesthetize, range of motion, trephinate
2. Range of motion, anesthetize, lift nail, x-ray, repair nail bed, splint
3. Anesthetize, range of motion, x-ray, lift nail, repair nail bed, splint
4. Range of motion, anesthetize, trephinate

Moh'd Terbi

Answer: 3 - Anesthetize, range of motion, x-ray, lift nail, repair nail bed, splint

Explanations:

- Range of motion should be done after anesthesia.
- An x-ray should be done to identify the need for repair.
- Trephination alone may be enough to manage the subungual hematoma, but it does not address likely underlying bony injuries.
- Subungual hematoma of 100% needs to be released with trephination or nail release.

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Moh'd Terjj

Research Concepts:

Subungual Hematoma Drainage




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Question 310: A 17-year-old female presents to the clinic with symptoms of hypoglycemia. During the biochemical evaluation, she is found to have elevated levels of pro-insulin, insulin, and C-peptide. Her past medical history is significant for primary hyperparathyroidism, diagnosed one year ago. She mentions that her father was diagnosed with primary hyperparathyroidism when he was 20 years old. What should be done for further evaluation of this patient?

Choices:

1. Genetic testing for RET gene mutation
2. Endoscopic ultrasound of the pancreas
3. Sequence analysis of the MEN1 gene and endoscopic ultrasound of the pancreas
4. Plasma calcitonin level

Moh'd Terbi

Answer: 3 - Sequence analysis of the MEN1 gene and endoscopic ultrasound of the pancreas

Explanations:

- The patient has been diagnosed with two primary manifestations of multiple endocrine neoplasia (MEN) type 1 – primary hyperparathyroidism and hypoglycemia concerning for pancreatic neuroendocrine tumor (PNET).
- That patient should undergo genetic testing for MEN type 1 to confirm the diagnosis. If the diagnosis of MEN type 1 is confirmed, then the patient should be screened for other tumors. Likewise, the patient should inform her family members and encourage them to do the same.
- Endoscopic ultrasound is the most sensitive modality for the detection of insulinoma.
- Serum calcitonin levels should be obtained in the workup for medullary thyroid cancer, which is seen in MEN type 2 syndromes, not MEN type 1. Genetic testing for RET gene mutation is also for MEN 2.

Monia Terbi

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Research Concepts:

Multiple Endocrine Neoplasia Type 1




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Question 311: A 17-year-old male presents for a checkup. He is relatively tall for his age with sparse body hair, small genitalia, somewhat reduced muscle mass, late puberty, and gynecomastia. Which is true about the epidemiology of the patient's disorder?

Choices:

1. It occurs in 1:25,000 males
2. The incidence of the disorder is increasing
3. Most cases of the disorder in the United States are diagnosed at or before birth
4. Most males with the disorder will not be azoospermic or infertile

Moh'd Terbi

Answer: 2 - The incidence of the disorder is increasing

Explanations:

- Klinefelter syndrome is the most common sex chromosome aneuploid disorder with a frequency of 1:500 to 1:1,000 males. The majority of cases of Klinefelter syndrome are due to random events during gametogenesis in parents with a typical complement of sex chromosomes.
- The incidence of Klinefelter syndrome appears to be increasing according to comparative studies of frequency over the past half-century. Hypothesized causes include increased parental age, environmental disruptors of meiosis I, and decreased frequency of termination of pregnancies in which Klinefelter syndrome is identified.
- Up to two-thirds of cases of Klinefelter syndrome are suspected of being undiagnosed. Likely less than 25% of all cases are diagnosed at or before birth, though the increase in non-invasive prenatal testing will likely increase the diagnosis of Klinefelter syndrome prenatally.
- Virtually all men with Klinefelter syndrome have impaired fertility and most will be azoospermic. Advances in assisted reproduction will allow some men with Klinefelter syndrome to father biological children but substantial technology is involved. A small minority of men with Klinefelter syndrome may produce some sperm with multiple sex chromosomes.

Mehdi Terbi

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Research Concepts:

Klinefelter Syndrome

StatPearls Knowledge Base

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Moh'd Terbi

Question 312: A 17-year-old female without significant past medical history presents with recurrent nausea, vomiting, abdominal pain and constipation, and lower extremity weakness with her menses. She has delirium and is confused. Which of the following is the most likely diagnosis?

Choices:

1. Schizophrenia
2. Niacin deficiency
3. Acute intermittent porphyria
4. Carcinoid syndrome

Moh'd Terbi

Answer: 3 - Acute intermittent porphyria

Explanations:

- Acute intermittent porphyria (AIP) is caused by a heme biosynthesis disorder.
- Symptoms include abdominal pain, psychiatric symptoms, and motor polyneuropathies.
- Symptoms can be triggered by ethanol, menstruation, certain medications, and infections.
- From 0.2 to 0.5 percent of patients being treated for a chronic psychiatric condition may have AIP.

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Moh'd Terbi

Research Concepts:

Acute Porphyria




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Question 313: A 9-month-old infant is brought by his parents with concerns for increased respiratory distress and hypoxemia. His past medical history is significant for prematurity, born at 27 weeks and he was intubated for four weeks. He was discharged home at five months of life on a nasal cannula of 1/4 L 100% oxygen. He has been on chlorothiazide, ipratropium by a nebulizer, budesonide, and sildenafil. His clinical presentation can be best attributed to which of the following complications are associated with prematurity?

Choices:

1. Systemic hypertension
2. Patent ductus arteriosus
3. Pulmonary hypertension
4. Tracheomalacia

Moh'd Terbi

Answer: 3 - Pulmonary hypertension

Explanations:

- Based on the infant's clinical history, he has a diagnosis of bronchopulmonary dysplasia (BPD). Pulmonary hypertension (PH) is one of the most dreaded complications associated with BPD. The infant was discharged home on sildenafil, which is the first-line treatment for BPD-associated PH.
- While the lung pathology of infants with PH and BPD has many common elements, it is important to note that not all infants with BPD develop PH. A recent meta-analysis reported an accumulative estimated prevalence of PH in BPD to be 20% and can be as high as 40% in severe BPD. The incidence of PH in BPD is higher in infants closer to discharge than in infants at 36 weeks postmenstrual age.
- Infants with BPD require surveillance with echocardiograms throughout their first year of life to assess for PH and heart function. PH also leads to right ventricular dilation and left ventricular dysfunction in these infants.
- Although systemic hypertension is a complication of BPD, it does not present with hypoxemia.

Michi's Tenth

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Research Concepts:

Bronchopulmonary Dysplasia



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Moh'd Terbi

Question 314: A 24-week-old infant was intubated on delivery and remained on mechanical ventilation for six weeks, following which he was transitioned to CPAP of 6 mm Hg and remained on the same mode of respiratory support. At 36 weeks of postmenstrual age and a new diagnosis is made. What is the most common screening tool used to assess for a well-known complication associated with this diagnosis?

Choices:

1. Cardiac catheterization
2. Serum brain natriuretic peptide
3. Echocardiogram
4. Blood pressure monitoring

Moh'd Terbi

Answer: 3 - Echocardiogram

Explanations:

- The infant in this vignette was exposed to mechanical ventilation for six weeks and then remains on CPAP at 36 weeks postmenstrual age (PMA). At this time, he would be diagnosed with severe bronchopulmonary dysplasia since the infant still requires positive pressure respiratory support.
- Pulmonary hypertension is a well-known complication of bronchopulmonary dysplasia (BPD), and the current guidelines suggest screening for it at 36 weeks PMA. Infants with severe BPD are at increased risk for this complication. The prevalence was estimated to be as high as 40% in severe BPD. Retrospective studies demonstrate a 2-year morbidity rate of 26 to 47% in-patient with BPD-associated pulmonary hypertension. Hence a high index of suspicion is necessary to diagnose this complication on time.
- The most common screening tool used for this is an echocardiogram.
- Serial levels of serum brain natriuretic peptide (BNP) and N-terminal-pro brain natriuretic peptide (NT-proBNP) can be used to monitor response to therapy and progression of disease in conjunction with the echocardiogram. These biomarkers should not be used for diagnosis alone since they are released by the myocardium in response to stretch and are not specific for right ventricle stress or pulmonary hypertension.

Med'd Terbi

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Research Concepts:

Bronchopulmonary Dysplasia

StatPearls Knowledge Base

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Moh'd Terbi

Question 315: A 3-year-old female was adopted from Guatemala 2 months ago and has watery diarrhea, belching, nausea, and abdominal pain. Her weight is at the fifth percentile and her height is at the fiftieth percentile. What test will most likely be diagnostic?

Choices:

1. Liver function tests
2. Stool for giardia antigen, ova, and parasites
3. Sudan stain of the stool
4. Stool culture for enteric pathogens

Moh'd Terbi

Answer: 2 - Stool for giardia antigen, ova, and parasites

Explanations:

- The patient probably has had long-term medical problems given her low weight and normal height. Stool for ova and parasites and giardia antigen will diagnose giardiasis. Liver function tests may be helpful in cases of liver abscess seen in amoebiasis but are not diagnostic for giardiasis.
- Bacterial infections are less likely than parasites due to the chronic nature of her presentation. Stool culture for enteric pathogens would not yield a diagnosis.
- Giardiasis, amebiasis, and other intestinal parasitic infections are most likely. Giardia may cause malabsorption, weight loss, and in extreme cases, failure to thrive.
- Sudan stain of the stool will detect steatorrhea, a symptom of the child's disease, but will not diagnose giardiasis.

Mon'd Terbi

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Research Concepts:

Giardia Lamblia Enteritis




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Question 316: An 11-year-old male presents for evaluation of a swollen and painful scrotum. He reports that the onset of symptoms was gradual, over several days. He denies any history of trauma. He reports he has recently begun playing soccer after school. What is the most likely etiology of this patient's condition?

Choices:

1. Repetitive activity
2. Sexually transmitted infection
3. Testicular torsion
4. Urinary tract infection

Moh'd Terbi

Answer: 1 - Repetitive activity

Explanations:

- Repetitive activity, such as jumping and running, can result in scrotal inflammation and epididymitis. This is the most common cause of acute epididymitis in sexually immature male patients.
- Repetitive activity and the mobility of the scrotal contents can result in the inflammation of the testes.
- Though it must be entertained as a diagnosis, the sexually transmitted disease is an unlikely cause of epididymitis in the sexually-immature male patient.
- Urinary tract infections are an uncommon cause of scrotal swelling in the sexually-immature male patient.

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Moh'd Terbi

Research Concepts:

Acute Scrotum Pain




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Question 317: A 16-year-old male with type 1 diabetes mellitus presents to the clinic with early morning hyperglycemic episodes. His glucose has been between 200 and 300 mg/dL before breakfast and has required increased doses of regular insulin by sliding scale. Readings for the remainder of the day have been within normal limits for him. There have been no recent changes in his medication, activity, or diet. Continuous glucose monitoring confirms no overnight hypoglycemia, but shows a significant rise in glucose levels in the early morning hours. Which of the following mechanisms is most likely responsible for poor glycemic control of this type?

Choices:

1. Somogyi effect
2. Nocturnal spike in growth hormone levels
3. Glucagon-like peptide 1 deficiency
4. Insulin resistance

Moh'd Terbi

Answer: 2 - Nocturnal spike in growth hormone levels

Explanations:

- Growth hormone levels typically spike in the early morning hours (between 2 and 8 am). Growth hormone antagonizes insulin, thereby encouraging hyperglycemia. This is called the "dawn phenomenon" which occurs in patients with type 1 diabetes mellitus, whose exogenous insulin might also be waning at this time.
- Patients with diabetes mellitus are unable to secrete an additional surge of insulin to counteract the resultant hyperglycemia, and the dawn phenomenon occurs.
- The Somogyi effect, although questioned in recent years, involves a previous hypoglycemic state that can cause rebound hyperglycemia as a result of the body's response to stress.
- The most effective control of these excursions of hyperglycemia has been obtained by the use of continuous insulin infusion. This gives the patient with diabetes mellitus the ability to respond in real time to the onset of hyperglycemia. Caution to avoid overnight hypoglycemic episodes must be employed at all times.

Mohsen Tehrani

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Research Concepts:

Dawn Phenomenon




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improvement.

Moh'd Terbi

Question 318: A 7-year-old boy is brought to the office as the parents have concerns about his behavior and performance in school over the past 6 months. His teacher has noticed that he is disruptive in class, cannot sit still at his desk, inappropriately blurts out answers to questions without being called on, and has difficulty staying on task to complete his daily assignments. His performance on school exams has dropped, which the teacher believes to be due to making more careless mistakes. Also, his hockey coach has reported that he often cannot wait his turn in line during drills. Which of the following is the best next step in the management of this patient?

Choices:

1. Prescribe methylphenidate alone
2. Behavioral therapies such as social skills, parent management training, and psychotherapy only
3. Prescribe methylphenidate in combination with other behavioral therapies
4. Prescribe atomoxetine and an individual education plan

Mohamed Terbi

Answer: 3 - Prescribe methylphenidate in combination with other behavioral therapies

Explanations:

- The diagnosis of attention deficit hyperactivity disorder (ADHD) requires at least 6 or more symptoms of hyperactivity/impulsivity over the past 6 months and presents before the age of 12. Symptoms must be present in more than one setting or environments such as home, school, church, and sports activities.
- Medication management with methylphenidate is most beneficial in controlling systems when used along with other behavioral therapies, such as social skills training, psychotherapy, and parent management training.
- Methylphenidate and stimulants, in general, should not be administered to children under 6 years of age as their safety has not been fully established and could lead to learning impairments.
- Atomoxetine, a norepinephrine reuptake inhibitor, can be given as first-line treatment in combination with behavioral therapies for ADHD in those with a family history of substance use, individuals with tics, or patients with comorbid anxiety disorders.

Mehdi Terki

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Research Concepts:

Attention Deficit Hyperactivity Disorder



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Moh'd Terbi

Question 319: A 14-month-old child, weighing 10 kg, swallowed 14 tablets of an iron supplement 2 hours ago. Each tablet contains 65 mg of elemental iron. Upon physical exam, level of consciousness is normal, blood pressure is 80/50 mm Hg, and the abdomen is diffusely tender. The patient has an episode of nonbloody emesis and vomits four iron tablets. An abdominal x-ray shows 10 tablets in the stomach. How much deferoxamine should be administered?

Choices:

1. IV infusion of 150 mg of deferoxamine per hour and consultation with a toxicologist
2. IV infusion of 800 mg of deferoxamine over 6 to 8 hours and consultation with a toxicologist
3. Observe patient and give deferoxamine 600 mg intramuscularly if symptoms worsen. Consult with a toxicologist
4. Intramuscular injection of 1000 mg of deferoxamine followed by 500 mg every 4 hours for 24 hours. Consult with a toxicologist

Wahiba Terbi

Answer: 1 - IV infusion of 150 mg of deferoxamine per hour and consultation with a toxicologist

Explanations:

- The patient ingested almost 60 mg/kg of iron and is hypotensive. Deferoxamine is indicated.
- IV deferoxamine is the treatment of choice in iron overdose with hypovolemia or shock. The dose is 15 mg/kg per hour.
- The maximum dose of IV deferoxamine is 35 mg/kg per hour.
- There are no guidelines on the duration of therapy. The typical treatment duration is 24 hours. Prolonged administration of IV deferoxamine may cause lung toxicity. Consultation with a toxicologist is recommended.

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Moh'd Terbi

Research Concepts:

Iron Toxicity




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Question 320: A 17-years- old male patient reports that he has problems when he eats bread or pasta and when drinking most beers. He develops itching, swelling, and urticaria. He denies any gastrointestinal symptoms. He takes no medications on a regular basis. He is concerned he has a gluten intolerance. What test is most likely to be diagnostic?

Choices:

1. IgA anti-tissue transglutaminase antibody
2. Small bowel biopsy
3. IgA endomysial and gliadin antibodies
4. Skin testing for wheat allergy

Moh'd Terbi

Answer: 4 - Skin testing for wheat allergy

Explanations:

- Less than 1% of patients in the United States test positive for a true wheat allergy. This allergy may be more common outside the U.S. This patient's symptoms are more allergic, as opposed to the usual presentation of celiac disease. Therefore, skin testing for wheat allergy is most likely to be diagnostic.
- The primary treatment is avoidance. Oral desensitization is available, and subcutaneous therapies are in development.
- Up to 60% of people in the U.S. believe that a gluten-free diet will benefit their health. Most commonly, these are digestive benefits, but some report other physical and mental health benefits.
- Some of these patients have nonceliac gluten sensitivity (NCGS). Two-thirds of patients with celiac disease have malabsorption symptoms. Only one-quarter of those with NCGS have malabsorption symptoms.

Mich'a Terbi

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Research Concepts:

Wheat Allergy




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Question 321: A 7-year-old boy is immediately brought to the emergency department after having accidentally ingested lye that was stored in the bathroom. The child is tachypneic, tachycardic, hoarse, and stridorous. His blood pressure is 89/57 mmHg, respiration is shallow at a rate of 32 breaths per minute, and has a pulse of 125 bpm. Which one of the following should be the initial management of choice for this patient?

Choices:

1. Activated charcoal
2. Neutralize with hydrochloric acid
3. Tracheostomy
4. Gastric lavage

Moh'd Terbi

Answer: 3 - Tracheostomy

Explanations:

- Whenever there is concern about airways after lye ingestion, a tracheostomy may be necessary. The airway can swell within minutes, and oral access may be impossible.
- Gastric emptying is contraindicated, and activated charcoal may interfere with endoscopy. A percutaneous tracheostomy is an option, or one may perform cricothyroidotomy. However, be prepared to deal with fragile tissue and bleeding. The procedure must only be done by someone who knows what they are doing and knows how to manage the complications of a tracheostomy in the emergency department.
- Lye often generates heat when mixed with water, and this can be minimized by diluting with a moderate quantity of water.
- One should not attempt to neutralize the caustic agent as there may be excessive heat produced, which can cause more damage.

Monica Terbi

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Research Concepts:

Caustic Ingestions




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Question 322: A 17-year-old male marathon runner presents to the clinic for evaluation of left ankle pain. The patient states that the pain started insidiously two months ago, and denies precipitating trauma or injury. The pain is worse with activity such as running and jumping, and better with rest. On physical examination, the ankle appears normal without deformity, swelling, or ecchymosis. There is pain to palpation proximal to the insertion of the Achilles tendon. Squeezing the patient's calf causes plantarflexion. Ultrasound of the Achilles shows no abnormality. What is the diagnosis?

Choices:

1. Achilles tendinosis
2. Achilles tendon rupture
3. Achilles tendinitis
4. Achilles tendon xanthoma

Moh'd Terbi

Answer: 3 - Achilles tendinitis

Explanations:

- Achilles tendinitis is a common injury that is seen in individuals who run or participate in jumping sports.
- Pain usually starts insidiously and worsens with activity and motion.
- While called tendinitis, inflammation is not seen histologically. Therefore it is sometimes called tendinopathy.
- Management often includes rest and anti-inflammatory medications.

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Moh'd Terbi

Research Concepts:

Achilles Tendonitis




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Question 323: A 16-year-old boy presents to the clinic for a routine physical examination. This summer, he will be working at a local amusement park and requires the appropriate documentation to be completed by his primary care provider. The patient has no significant past medical history and currently takes no medications. Physical examination reveals a healthy young boy who appears his stated age. When asked about social history, the patient denies any history of tobacco use. However, upon further questioning, it is revealed that the patient "just smokes his vape" at weekend parties. According to the recent studies, which of the following micro-constituents found within e-cigarette products is paired with the correct potential side effect?

Choices:

1. Nicotine and carcinogenesis
2. Glycerol and gastrointestinal symptoms
3. Propylene glycol and local squamous metaplasia
4. Acetylaldehyde and axonal demyelination

Mo'n'a Terbi

Answer: 3 - Propylene glycol and local squamous metaplasia

Explanations:

- Aerosolized glycerol and propylene glycol have been associated with focal squamous metaplasia of the upper airways. Glycerol itself is not associated with gastrointestinal symptoms, unlike nicotine.
- The major constituents of e-cigarette aerosols include nicotine, glycerol, propylene glycol, and artificial flavorings. Isolated inhalation of nicotine has been associated with localized oxidative stress and inflammation to the pulmonary endothelium, in addition to reduced levels of inflammatory mediators such as glutathione.
- Heavy metals including chromium, nickel, and lead have also been found within combustible e-cigarette vapor and have known carcinogenic effects.
- Acetylaldehyde is also a known carcinogen and has been found in micro quantities in some solvent mixtures in e-cigarette devices.

Michi's Terbi

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Research Concepts:

Electronic Vaping Delivery Of Cannabis And Nicotine




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Question 324: A young female is brought to the emergency department with an acute onset of crushing substernal pain radiating to the left arm and shortness of breath. Significant past medical history includes hospitalization for a heart problem at age 3 years that was treated with aspirin and gamma globulin. Her electrocardiogram shows 3 mm of ST elevation in the anterior leads. She has followed up for yearly echocardiograms since this time. Select the most likely cause of the patient's symptoms.

Choices:

1. Vasospasm after cocaine ingestion
2. Thrombosis of a coronary artery aneurysm
3. Vasculitis of the left anterior descending artery
4. Dissection of the aortic root compromising blood flow into the left coronary ostium

Moh'd Terbi

Answer: 2 - Thrombosis of a coronary artery aneurysm

Explanations:

- Kawasaki disease is a vasculitis of medium and small vessels that can lead to coronary artery aneurysms. Intravenous immunoglobulin (IVIG) treats the vasculitis and decreases the risk of aneurysm from 25% to 3%. These patients are also treated initially with high dose aspirin.
- Patients with large coronary artery aneurysms are treated with antithrombotic agents (low-molecular-weight heparin or warfarin) and antiplatelet agents (aspirin, clopidogrel or dipyridamole).
- Most aneurysms regress, especially if fusiform, small and distal, but those greater than 8 mm can persist and develop rupture, thrombosis, recanalization, and stenosis at the outflow area.
- Cardiac stress testing for reversible ischemia is recommended for KD children with known coronary aneurysms.

Mon'd Terbi

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Research Concepts:

Kawasaki Disease




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Question 325: A 5-year-old female presents to the emergency department (ED) with severe abdominal pain and diarrhea. The patient has had about five to six loose stools per day for the last month. The patient's mother took her to a healthcare provider 2 months ago and was diagnosed with stunted growth. The child was started on oral pancreatic enzyme replacement at 20,000 units/kg/day of lipase. She developed loose stools one month after starting pancrelipase. Lab work in the ED reveals a decrease in WBC counts. An ultrasound of the abdomen shows a possible mass in her right iliac fossa. She underwent genetic testing during infancy which revealed an abnormality. What is the mode of inheritance of this disorder, and what complication of pancrelipase use has the child developed?

Choices:

Mehdi Terki

1. Autosomal dominant, irritable bowel syndrome
2. X-linked dominant, fibrosing colonopathy
3. Autosomal recessive, lactose intolerance
4. Autosomal recessive, fibrosing colonopathy

Answer: 4 - Autosomal recessive, fibrosing colonopathy

Explanations:

- Shwachman-Diamond syndrome (SDS) is an autosomal recessive disorder that presents in infancy. The usual presentation includes skeletal abnormalities, neutropenia, bone marrow dysfunction, and exocrine pancreatic insufficiency.
- Fibrosing colonopathy is a condition in which there is a narrowing of the lumen of a long segment of the colon. This occurs due to submucosal widening secondary to the deposition of mature collagen. It most commonly is seen in children with cystic fibrosis, as they require long-term, high-dose pancreatic enzyme replacement. It may present with symptoms, signs, and imaging very similar to Crohn disease.
- As bone marrow dysfunction is a feature of SDS, febrile neutropenia frequently is associated with the condition. Patients present with fever associated with other signs of infection.
- The recommendation for children above 4 years of age is a maximum of 10,000 units/kg/day if lipase orally or less than 4,000 lipase units per gram of dietary fat per day. Chronic high-dose pancreatic enzyme replacement has been shown to cause colonic strictures and fibrosing colonopathy.

Mona Terry

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Research Concepts:

Pancrelipase Therapy



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Moh'd Terbi

Question 326: A 5-year-old male with no significant past medical history is brought in by his parents for 48 hours of vomiting, as well as diarrhea. Parents state that the child has had multiple “explosive” bouts of watery, non-bloody diarrhea over this period. Also, he has had multiple bouts of non-bloody, non-bilious vomiting. His parents state that he has not been able to keep anything down. He is urinating normally, according to his parents. No fevers have been noted. The child has an older sibling who had similar symptoms several days ago. They deny any recent travel. On exam, the child appears non-toxic and mildly dehydrated. His abdomen is soft and without tenderness. Vital signs are temperature 37.6 C, heart rate 105/minute, respiratory rate 20/minute, blood pressure 95/60 mmHg, and oxygen saturation 99%. What is the most appropriate course of action?

Choices:

Mohsen Tehrani

1. Antiemetics and then attempt oral rehydration
2. Administer IV fluids, antiemetics, and admit to the hospital
3. Administer IV fluids, give antimotility agents, and discharge home
4. Administer IV fluids, obtain chemistry and CT of the abdomen, and admit to an observation unit

Answer: 1 - Antiemetics and then attempt oral rehydration

Explanations:

- Patients with mild dehydration should be treated with antiemetics and oral hydration. Patients who show signs of severe dehydration may require IV fluids.
- The need for IV fluids does not necessarily dictate hospital admission.
- It is important to ensure patients can continue to address their hydration needs at home before discharging.
- The treatment of vomiting is much more important than the treatment of diarrhea in cases of viral gastroenteritis.

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Moh'd Terbi

Research Concepts:

Viral Gastroenteritis




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Question 327: A 5-year-old female presents to the emergency department with her mother, who reports there was blood in the patient's underwear. The patient's past medical history is remarkable for multiple pathologic fractures involving the left tibia, left radius, and left humerus. Both the patient and the mother deny any recent vaginal or rectal trauma. Records indicate a previous report to child protection services who did not find anything suspicious. Physical examination reveals breast development consistent with Tanner stage 2, but no pubic hair growth. Multiple hyperpigmented, irregularly shaped cutaneous macules are noted on the patient's left arm and left leg. Which of the following is the most likely diagnosis?

Choices:

1. McCune-Albright syndrome
2. Neurofibromatosis type-1
3. Ontogenesis imperfecta
4. Tuberous sclerosis

Moh'd Terbi

Answer: 1 - McCune-Albright syndrome

Explanations:

- McCune-Albright syndrome is a rare disorder characterized by precocious gonadarche (blood in underwear), polyostotic fibrous dysplasia of the bone (multiple fractures), and cafe au lait spots.
- It affects the bones, skin, and several endocrine tissues.
- Cafe au lait macules (CALMs) of McCune-Albright syndrome is very characteristic and is described as a "coast of Maine" that respects midline.
- Neurofibromatosis type 1 (NF-1) is an autosomal dominant neurocutaneous disorder, which presents with multiple café au lait spots, neurofibromas, freckling of the axilla and groin, optic gliomas, lisch nodules (iris hamartomas), and bone abnormalities (scoliosis). Patients with NF-1 and CNS involvement (e.g., optic gliomas) may develop precocious puberty due to mass effect disrupting the region of the brain that inhibits puberty during childhood. This results in a central, GnRH-dependent precocious puberty. Osteogenesis imperfecta is not associated with precocious puberty or cafe au lait spots.

Mohsen Tehrani

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Research Concepts:

Cafe Au Lait Macules




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improvement.

Moh'd Terbi

Question 328: A 17-year-old female presents to the emergency department due to heavy menstrual bleeding. Her urine pregnancy test is negative. She reports a past medical history of frequent epistaxis and gum bleeding. She denies a history of any surgery. Upon further questioning, she admits to heavy menses since menarche. Her vitals are blood pressure 120/80 mmHg, pulse 65 beats/min, respiratory rate 18, SpO2 100% on room air, and temperature 98.6 F (37 C). In addition to a CBC and type and screen, what testing should be ordered?

Choices:

1. Hemoglobin electrophoresis
2. von Willebrand disease testing
3. Factor V Leiden testing
4. Prolactin level

Moh'd Terbi

Answer: 2 - von Willebrand disease testing

Explanations:

- Overall, 20% of females with abnormal uterine bleeding (AUB) will have an underlying coagulopathy and 13% will have a form of von Willebrand disease. There is an established clinical screening tool used to assist in determining which patients would benefit from further testing. This patient meets the criteria for further von Willebrand disease testing.
- Von Willebrand disease is the most common coagulopathy found in women with AUB.
- Females with a history of AUB since menarche likely will require additional coagulopathy screening.
- A positive von Willebrand disease screening includes heavy menstrual bleeding since menarche plus one of the following conditions: postpartum hemorrhage; surgery-related bleeding; or bleeding associated with dental work. Also, a positive screening can include heavy menstrual bleeding since menarche plus two or more of the following: bruising two times per month; epistaxis one to two times per month; frequent gum bleeding; or a family history of bleeding symptoms.

Mimi Terhi

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Research Concepts:

Menorrhagia



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Moh'd Terbi

Question 329: A female neonate in the neonatal intensive care unit was noted at birth to have difficulty breathing. Her tongue is protruding from her mouth, and her mandible and other facial features all appear to be within normal limits. She makes noises consistent with upper airway obstruction. Her oxygen saturation is 89% on room air and improves to 92% with jaw thrusting. She has not yet been intubated, and her airway appears to be protected with jaw thrust. What is the most appropriate next step in management?

Choices:

1. Administer supplemental oxygen only
2. Emergent tracheostomy
3. Corticosteroids with continued head tilt, jaw thrust, and oral airway
4. Emergent direct laryngoscopy or bronchoscopy with intubation or tracheostomy as directed by findings

Moh'd Terbi

Answer: 4 - Emergent direct laryngoscopy or bronchoscopy with intubation or tracheostomy as directed by findings

Explanations:

- Although the patient has an enlarged tongue, Down syndrome can be difficult to diagnose on physical examination in the neonate.
- Laryngomalacia is a common cause of airway obstruction in patients with Down syndrome.
- Without direct laryngoscopy and bronchoscopy, this cannot be ruled out as the cause of the obstruction, although jaw thrusting should not improve the breathing in a patient with laryngomalacia.
- Emergent tracheostomy is not indicated in this patient without an attempt at intubation because her airway appears protected with positioning. Continued positioning maneuvers will not stabilize this patient.

Mohd Terbi

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Research Concepts:

Airway Obstruction




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Question 330: A 16-year-old competitive swimmer presents due to increased coughing and shortness of breath during physical exercise. She also reports chest tightness and mentions these symptoms start within 15 minutes of starting swimming exercises. She has a past medical history of allergic rhinitis. There is wheezing on auscultation. An exercise challenge test is performed. A 10% drop should be observed in which of the following to confirms this patient's most likely diagnosis?

Choices:

1. Forced vital capacity (FVC)
2. Forced expiratory volume in 1 second (FEV1)
3. Peak expiratory flow rate (PEFR)
4. Forced expiratory flow (FEF)

Moh'd Terbi

Answer: 2 - Forced expiratory volume in 1 second (FEV1)

Explanations:

- Exercise-induced bronchoconstriction is defined as a transient airway obstruction following exercise.
- It is measured by a fall in FEV1. A fall in FEV1 of at least 10 percent post-exercise is generally considered diagnostic.
- Post-exercise cough is a common feature of exercise-induced bronchospasm.
- Shortness of breath, chest tightness, or wheezing may also be found.

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Moh'd Terbi

Research Concepts:

Exercise Induced Asthma




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Question 331: A vaccination list for a 9-month-old girl during a routine well-child visit shows that she has only had one DTaP, IPV, and Hib conjugate vaccine at 2 months of age despite regular visits to her previous primary care provider. Her mother reports that vaccines were not given at regularly scheduled times secondary to symptoms of a runny nose or low-grade fever at her 4- and 6-month well-child visits. Which of the following is true regarding childhood vaccination?

Choices:

1. Fever above 38.5 C is an absolute contraindication to giving childhood vaccines
2. Minor illnesses are not a contraindication for any routine childhood vaccine
3. She should not be given a DTaP, IPV, and Hib conjugate vaccine at this visit
4. All future vaccines also will be delayed secondary to the current delayed schedule

Moh'd Terbi

Answer: 2 - Minor illnesses are not a contraindication for any routine childhood vaccine

Explanations:

- According to the Centers for Disease Control and Prevention (CDC), those who administer vaccines should screen patients for contraindications and precautions to the vaccine before each dose of vaccine is administered. All vaccines have as contraindications severe allergic reactions (e.g., anaphylactic reaction) after a previous dose or a vaccine component. DTaP should contraindicate if the child develops encephalopathy within seven days of administration of a prior dose of DTP or DTaP and after ruling out other causes of brain illness. Hepatitis B vaccine contraindicates in patients with hypersensitivity to yeast. Hib vaccine contraindicates in age less than 6 weeks. MMR vaccine is avoided in those with a known severe immunodeficiency due to lymphoid malignancies, congenital cause, chemotherapy, family history of immunosuppression, and in patients with HIV/AIDS. Rotavirus vaccine must contraindicate in children with a history of intussusception, and it should use with precaution in altered immunocompetence, other than severe combined immunodeficiency disorder. Both varicella and zoster vaccines contraindicate in immunocompromised host and pregnancy. A live-attenuated influenza virus vaccine should be avoided when in the previous 48 hours, a patient has taken influenza antiviral medication. It should be dosed with precaution in patients who developed Guillain-Barre syndrome within six weeks after a prior dose of influenza vaccine and in patients who have asthma, aged 5 or older.
- A minor illness is not a contraindication for any routine childhood vaccine. Failure to vaccinate children with minor illnesses can hinder vaccination efforts.
- History of fever is not an absolute contraindication for any routine childhood vaccines. According to the CDC, vaccination should

Meni's Tervi

be deferred for persons with a moderate or severe acute illness with or without fever. This precaution avoids causing diagnostic confusion. Moreover, patients with moderate or severe acute illness should be vaccinated as soon as the acute illness has improved.

- A catch-up vaccine schedule should start as soon as a child with delayed vaccines is identified, and future vaccines should be given at the recommended age.

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Research Concepts:

Vaccine (Vaccination)

Mohamed Terbi




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Question 332: A 10-year-old male with a complaint of short stature for three years. On past medical history, he had normal birth weight and length; the parents only notice dry skin. Vital signs are normal with height 109.4 cm and weight 27 kg. On physical exam, only positive is epicanthal folds with coarse facial features, dry, coarse hair, and dry skin. What lab workup would most likely reveal the most likely diagnosis?

Choices:

1. Bone age
2. T4 and thyroid stimulating hormone
3. Growth hormone stimulation test
4. Growth hormone and IGF-1

Moh'd Terbi

Answer: 2 - T4 and thyroid stimulating hormone

Explanations:

- The patient most likely has hypothyroidism. Bone age is part of the workup and should be a delay. but Bone age itself does not diagnose anything.
- In children with FFT that are very behind in their growth curve, it is actually more likely to be T4 deficiency rather than GH. normally GH deficiency will manifest with a shift in the growth SD, but not as severe as hypothyroidism. also, his facial findings are more common from a thyroid disease.
- GH stimulation test is the confirmatory test for GH deficiency but is not the most likely diagnosis.
- GH and IGF-1 are screening tests, a negative test is reassuring of no problems with GH. A positive test needs further evaluation. In this case, GH and IGF-1 could be negative, but obviously, our patient has severe growth retardation requiring further testing.

Mona Terbi

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Research Concepts:

Constitutional Growth Delay




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Question 333: A 17-year-old male presents for a routine check-up. His mother states that he is not gaining weight and is short compared to his peers in school. He urinates frequently and does not participate in sports due to muscle weakness. Physical examination shows his height is less than the 50th percentile for his age group and weight less than the 65th percentile. Laboratory analysis showed hyperchloremic metabolic acidosis with a serum potassium of 2.5 meq/L. Urinalysis showed a urinary pH of 4.5, positive urine anion gap, urine sodium of 30 meq/L, aminoaciduria, and glycosuria. Which one of the following is the underlying cause of stunted growth in this patient?

Choices:

1. Multicystic kidney disease
2. Type 1 distal renal tubular acidosis (RTA)
3. Type 2 proximal RTA
4. Nephrotic syndrome

Moh'd Terbi

Answer: 3 - Type 2 proximal RTA

Explanations:

- Type 2 proximal RTA presents with hypokalemia, growth failure, hypophosphatemic rickets, and hyperchloremic metabolic acidosis. It is primarily a defect of bicarbonate reabsorption in the proximal convoluted tubule. It is less common than Type 1 RTA which is caused by a defect in hydrogen ion excretion in the distal tubule and leads to a more significant metabolic acidosis, nephrocalcinosis, and kidney stones.
- Fanconi syndrome is a defect in the proximal convoluted tubules causing failure to reabsorb almost all amino acids, glucose, bicarbonate, phosphate, and potassium.
- The most common cause of proximal RTA in adults, with or without Fanconi syndrome, is the excretion of monoclonal light chains. Thus, monoclonal gammopathy should be excluded in all adults with proximal RTA unless another cause is apparent.
- Patients with proximal RTA should be evaluated for Fanconi syndrome with serum and urine measurements looking for renal glycosuria, hypophosphatemia, and hypouricemia.

Mona Tehrani

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Research Concepts:

Renal Tubular Acidosis




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improvement.

Moh'd Terbi

Question 334: A 3-year-old female is brought in by her parents for 4 days of incessant dry cough. The vital signs are temperature 39.2 C (102.5 F), pulse 82 beats/min, respirations 12/min, and blood pressure 124/86 mmHg. The relevant history includes parents who both smoke cigarettes, have no sick contacts, and recent travel to the zoo where they spent a considerable amount of time in the aviary exhibition. A chest x-ray shows single lobar changes and likely pneumonia. What is the best treatment?

Choices:

1. Tetracycline orally at 25 mg/kg/dose every 6 hours for 7 days
2. Doxycycline IV at 2.2 mg/kg/dose twice daily for 5 days
3. Azithromycin orally at 10 mg/kg single dose first day, followed by 5 mg/kg from the second to fifth day
4. Ceftriaxone IV at 50 mg/kg/day for 5 days

Moh'd Terbi

Answer: 3 - Azithromycin orally at 10 mg/kg single dose first day, followed by 5 mg/kg from the second to fifth day

Explanations:

- This patient has a history of recent exposure to birds and pneumonia, which is characteristic of Chlamydia psittaci infection.
- Pulse-temperature dissociation is commonly found in C. psittaci infection but also is common in Q fever and Legionnaire disease.
- The first-line treatment for adults with C. psittaci is tetracyclines. Macrolides remain the treatment of choice for children, but some authorities feel doxycycline is still an option. This is most important for severely ill patients.
- Chest radiography frequently shows single lobar changes. However, multilobar changes can be observed.

Mohd Terbi

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Research Concepts:

Psittacosis Pneumonia



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Question 335: A 17-year-old male with no past medical history presents to the emergency department severely intoxicated after reportedly ingesting a bottle of isopropyl alcohol. His labs are remarkable for a creatinine of 1.8 mg/dL and a BUN of 10 mg/dL. Ketones are detectable in urine. He vomited twice and urinated in his hospital bed. What is the most appropriate management?

Choices:

1. Observe until clinically well and discharge with a responsible adult
2. Admit to the intensive care unit
3. Administer fomepizole and admit to the intensive care unit
4. Consult nephrology for dialysis

Moh'd Terbi

Answer: 1 - Observe until clinically well and discharge with a responsible adult

Explanations:

- Isopropyl is known to cause severe intoxication, hemorrhagic gastritis, and falsely elevated creatinine due to acetone (Jaffe reaction).
- Most patients improve with supportive care, including hydration, and can be discharged if ingestion was not a self-harm attempt.
- Fomepizole is not required to treat isopropyl alcohol ingestion because its metabolite does not cause acidosis or any specific end-organ toxicity.
- Dialysis is not necessary as the creatinine is falsely elevated. This requires a repeat basic metabolic panel when clinically improved to reassess creatinine, but the normal blood urea nitrogen does not correlate with the elevated creatinine, raising the concern for a falsely elevated creatinine.

Mona Terbi

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Research Concepts:

Isopropanol Toxicity




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Question 336: A 5-year-old male patient presented with his adopted mother for psychiatric assessment. Adopted mother stated that the patient throws temper tantrums and cries without any evident trigger, and nothing makes him happy at home. The patient does not react if parents left him alone, and he does not have a desire to participate in family activities. Mom denied any restrictive interest, repetitive movements, or sensory processing difficulties. She noted the patient was adopted at four years of age, and he was severely neglected and placed in several foster places before the adoption. During the assessment, the patient maintained good eye contact with the child psychiatrist, and he displayed constant attention-seeking behaviors. What would be the appropriate treatment approach for this child?

Choices:

1. Parent education and trauma-focused therapy
2. Starting a mood stabilizer medication
3. Dialectical behavioral therapy
4. Applied behavior analysis therapy

Monica Terbi

Answer: 1 - Parent education and trauma-focused therapy

Explanations:

- Treatment of reactive attachment disorder requires both patient and parent involvement. Trauma-focused or attachment-based therapy can be used for patients, along with parent education and family therapy.
- Treatment strategies should focus on providing a safe and stable environment for the child while strengthening the attachment with parents and other caregivers.
- Medications are not effective for reactive attachment disorder, but they may be used to treat comorbid mood and anxiety-related symptoms.
- Dialectical behavioral therapy (DBT) is similar to cognitive behavioral therapy intervention. DBT can be used for patients who have chronic suicidal ideation and self-harm behaviors. Applied behavioral analysis (ABA) is a flexible treatment modality for children with autism. ABA therapy can improve social communication and learning skills by changing specific behaviors.

Mohit Terkar

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Research Concepts:

Reactive Attachment Disorder




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improvement.

Moh'd Terbi

Question 337: In some children, there is a syndrome that presents with fever of unknown origin that is associated with episodic fevers with fever-free intervals. Which of the following disorders does not exhibit recurrent fevers?

Choices:

1. Cyclic neutropenia
2. Hyper-IgD syndrome
3. Tumor necrosis receptor-associated periodic fever syndrome
4. Kikuchi-Fujimoto disease

Moh'd Terbi

Answer: 4 - Kikuchi-Fujimoto disease

Explanations:

- Other disorders causing periodic, recurrent, or episodic fevers include periodic fever, aphthous stomatitis, pharyngitis, adenitis, relapsing fever caused by Borrelia recurrentis, and familial Mediterranean fever.
- Kikuchi-Fujimoto disease is a histiocytic necrotizing lymphadenitis and is in the differential diagnosis of regional or generalized lymphadenopathy that usually presents as a fever of unknown origin but not as a periodic fever syndrome.
- Kikuchi disease is also known as Kikuchi-Fujimoto disease, histiocytic necrotizing lymphadenitis, Kikuchi necrotizing lymphadenitis, phagocytic necrotizing lymphadenitis, subacute necrotizing lymphadenitis, or necrotizing lymphadenitis.
- Kikuchi disease presents with fever, lymphadenopathy, skin rashes, and headache. Rarely, hepatosplenomegaly and nervous system involvement similar to meningitis may be seen. Patients often experience extreme fatigue from minimal exercise. Differential diagnosis includes systemic lupus erythematosus, disseminated tuberculosis, lymphoma, sarcoidosis, and viral lymphadenitis. Clinical findings may include positive results for IgM, IgG, or IgA antibodies. Kikuchi disease is diagnosed by lymph node excision biopsy. It is a self-limiting illness which is similar to Hodgkin lymphoma, leading to misdiagnosis in some patients. Antinuclear antibodies, antiphospholipid antibodies, anti-dsDNA, and rheumatoid factor are usually negative, which may help in differentiation from systemic lupus erythematosus.

Mehdi Terki

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Research Concepts:

Kikuchi Disease

StatPearls Knowledge Base


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Moh'd Terbi

Question 338: A 17-year-old never pregnant female was treated for trichomonas infection with a single 2-gram dose of metronidazole. She returns for a test of cure 2 months later. While a wet prep is negative her nucleic acid amplification test for trichomonas is positive. She denies any sexual activity since her initial treatment. What is the next step in management?

Choices:

1. No further treatment
2. 2 grams of metronidazole by mouth once
3. 2 grams of tinidazole by mouth once
4. 500 mg of metronidazole by mouth twice a day for 7 days

Moh'd Terbi

Answer: 4 - 500 mg of metronidazole by mouth twice a day for 7 days

Explanations:

- Because of the high rate of reinfection among women treated for trichomonas the CDC recommends retesting for T. vaginalis is recommended for all sexually active women within 3 months following initial treatment regardless of whether they believe their sex partners were treated.
- Persistent or recurrent infection caused by antimicrobial-resistant T. vaginalis should be distinguished from the possibility of reinfection from an untreated sex partner. Most recurrent T. vaginalis infections are the result of reinfection, but metronidazole resistance occurs in 4% to 10% of cases of vaginal trichomoniasis, and tinidazole resistance in 1%.
- Single-dose therapy should be avoided for treating recurrent trichomoniasis that is not likely a result of reinfection.
- If treatment failure has occurred with metronidazole 2 g single dose and reinfection is excluded, the patient can be treated with metronidazole 500 mg orally twice daily for 7 days. If this regimen fails, clinicians should consider treatment with metronidazole or tinidazole at 2 g orally for 7 days.

Michael Terry

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Research Concepts:

Trichomoniasis



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Moh'd Terbi

Question 339: A 16-year-old female with no significant medical history presents to the emergency department with generalized weakness. She reports that for the past year, she has been using her fingers to force herself to vomit approximately five times per week after eating abnormally large meals. On examination, she has dry mucous membranes with poor skin turgor. Her vital signs are within normal limits. Which of the following is the next best step in the management of this patient?

Choices:

1. Initiating cognitive behavioral therapy
2. Initiating omeprazole
3. Initiating fluoxetine
4. Initiating intravenous normal saline

Moh'd Terbi

Answer: 4 - Initiating intravenous normal saline

Explanations:

- This patient's history is consistent with bulimia nervosa. Her symptoms are likely the result of metabolic derangements and dehydration from self-induced vomiting. Excessive vomiting often leads to metabolic alkalosis, due to loss of hydrogen ions and from volume contraction due to dehydration. In this case, the physical exam is consistent with dehydration. In addition to the cessation of self-induced vomiting, it is necessary to correct the metabolic abnormalities by isotonic fluid replacement. The patient may also have developed hypokalemia, which should be addressed if present.
- Normal saline infusion corrects the fluid volume depletion caused by vomiting. In a hospital setting, this may be administered intravenously. In an outpatient setting, the patient may be encouraged to maintain adequate hydration by taking an oral rehydration solution.
- Patients in the hospital with bulimia nervosa who are administered intravenous fluids should be monitored for signs of volume overload. Intravenous saline is not indicated for patients with bulimia nervosa who demonstrate signs of volume overload.
- This patient presents with complications caused by her self-induced vomiting. The most urgent step in this patient's treatment is to address the metabolic abnormality. While a psychiatric evaluation is warranted and fluoxetine with cognitive behavioral therapy is indicated for the treatment of her bulimia nervosa, these should be pursued after the correction of her dehydration.

Mohit Tehri

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Research Concepts:

Bulimia Nervosa




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Moh'd Terbi

Question 340: You are seeing your patient, Justin, in the office for a 14-year-old adolescent visit. Justin has mild persistent asthma but is otherwise healthy. His mother comments on how much he has grown in the past year and is now towering over her! You review his growth chart with him and note that he has gained 10 cm in height and 12 kg in weight. During his exam, what would you would expect his Tanner staging and testicular volume to be?

Choices:

1. Tanner III and volume of 6 to 12 ml
2. Tanner IV and volume of 6 to 12 ml
3. Tanner IV and volume of 12 to 20 ml
4. Tanner V and volume of 12 to 20 ml

Moh'd Terbi

Answer: 3 - Tanner IV and volume of 12 to 20 ml

Explanations:

- The boy in this vignette achieved peak growth velocity in the past year. Thus, although he might have been Tanner stage III at the height of his growth, it is more likely that he will be Tanner stage IV during this exam.
- Testicular volume varies from individual to individual during each stage. However, there are ranges which correspond to each pubertal stage with Tanner stage I 1.5 ml, Tanner stage II 1.6 to 6 ml, Tanner stage III 6 to 12 ml, Tanner stage IV 12 to 20 ml, and Tanner stage V >20 ml.
- The pubertal growth spurts correspond closely to the pubertal stage and not to chronological age. Girls achieve peak growth velocity at Tanner stage III at 8.25 cm/year. Boys achieve peak growth velocity at Tanner stages III to IV at 9.5cm/year.
- Males and females achieve peak growth velocity at different stages of development. Boys achieve this peak on average 2 years later than girls.

Mona Terbi

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Research Concepts:

Tanner Stages




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Question 341: A 6-year-old male patient presents to the clinic with chronic mouth breathing and snoring. This has been a lifelong problem. On examination, he has 3+ tonsils, a hyponasal voice, and has scant, clear rhinorrhea in addition to an anterior open bite. What is the most appropriate imaging modality to evaluate this patient's condition?

Choices:

1. CT of the sinuses
2. MRI of head and neck
3. Ultrasound of the neck
4. Lateral neck x-ray

Moh'd Terbi

Answer: 4 - Lateral neck x-ray

Explanations:

- A lateral neck x-ray is a quick, inexpensive study that can help identify adenoid hypertrophy.
- The size of the adenoids is graded on a scale of zero to four: 0 absent, 1+ less than 25% obstruction of the nasopharynx, 2+ 25% to 50% obstruction, 3+ 50% to 75% obstruction, and 4+ greater than 75% obstruction.
- Examination with a flexible nasolaryngoscope provides an excellent view of the adenoids but is often not tolerated by young children.
- Hypertrophy of the adenoids can contribute to obstructive sleep apnea, nasal obstruction, and can affect midfacial development including occlusal and palate abnormalities.

Mohud Terbi

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Research Concepts:

Adenoid Hypertrophy




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Question 342: An 11-year-old African American male is brought in by his mother, who is concerned about the fact that the patient wets the bed 1 or 2 times per week. Mother states that this has been an issue for the past four years, but she thought it was a behavioral problem and tried to discipline the child without any response. The mother decided to bring the patient for medical evaluation after he had 1 episode of daytime incontinence three days ago. Which of the following comorbidities is most likely to be present in the patient?

Choices:

1. Sickle cell disease
2. Gastroesophageal reflux disease
3. Aortic stenosis
4. Wilson disease

Moh'd Terbi

Answer: 1 - Sickle cell disease

Explanations:

- Patients with sickle cell disease have a higher incidence of enuresis.
- Among adults with sickle cell disease ages 18-20 years, approximately 9% report nocturnal enuresis.
- It is known that one of the renal complications of sickle cell disease is a decrease in the renal capacity to concentrate urine.
- This decreased ability to concentrate urine leads to polyuria, which is likely to be the mechanism leading to a higher incidence of enuresis in these patients.

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Moh'd Terbi

Research Concepts:

Nocturnal Enuresis




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Question 343: A 4-week-old male is brought in to the pediatrician by his mother concerning a mass on his neck. The mother states that her child did not have this mass on birth. The mass is soft and mobile in front of the neck. Which of the following is the most likely cause of this mass?

Choices:

1. Lymphadenopathy
2. Ectopic thymic tissue
3. Ectopic thyroid
4. Lipoma

Moh'd Terbi

Answer: 2 - Ectopic thymic tissue

Explanations:

- Ectopic thymus tissue is a benign process resulting from the failure of descent.
- Ectopic thymic tissue forms a small mass in the neck that can feel like a lymph node, usually presenting in the cervical area or mediastinum, and less commonly intrathyroidal region.
- If ectopic thymus tissues enlarge further, it can be confused for lymphoma. Ectopic glandular tissue originating from the thymus can trigger a series of problems similar to those of thymomas.
- Ectopic thymic tissue carries no increased incidence of malignancy and is a rare malformation. Thymic tissue containing cysts is rarely described in the literature.

Mahdi Terbi

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Research Concepts:

Thymic Hyperplasia




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Question 344: A 5-year-old boy came to the primary care provider with history of recurrent infections of the throat and skin. Patient denies fever, night sweats or bone aches. A CBC showed white blood cell count: 4.1/mcL, hemoglobin: 13.2 gm/dl and platelet count: 320,000/ml. A blood smear evaluation showed no blasts. Prothrombin time and partial thromboplastin time are within normal. Basic metabolic panel is also within normal. What is the next best step in the management of this patient?

Choices:

1. Close follow-up and CBC in 2 months
2. C-reactive protein
3. CD4:CD8 ratio
4. Bone marrow aspirate or biopsy

Moh'd Terbi

Answer: 4 - Bone marrow aspirate or biopsy

Explanations:

- The best next step in this patient is bone marrow aspirate or biopsy to rule out leukemia and lymphoma as the recurrent infection is an alarming sign in this age group
- CBC may show no blasts in acute leukemia patients
- Patients with acute leukemia may present with unilineage, bilineage, or pancytopenia or normal blood indices.
- ALL is the most common leukemia in patients less than 10 years old.

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Moh'd Terbi

Research Concepts:

Lymphoblastic Lymphoma




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Question 345: A 10-month-old previously healthy child is accompanied by her mother for a chief complaint of diffuse rash that occurs when the child consumes scrambled eggs. The child will occasionally vomit but otherwise appears in no acute distress. The parents suspect a potential egg allergy, and so they keep their child away from any potential egg exposure until they see the pediatrician. The child was born via vaginal delivery with no complications and is up-to-date with all age appropriate vaccinations. There is no family history of allergies in the family, but the child's father has a history of childhood asthma. The child appears to be well nourished and playful. No rashes are observed. The lungs are clear to auscultation, and there are no abnormalities noted on cardiac auscultation. Bowel sounds are present, and all age appropriate developmental milestones are met. What is the next step in management?

Choices:

Moh'd Terbi

1. Referral to a pediatric allergist and to resume home diet under supervision
2. Referral to a pediatric allergist and to continue to refrain from egg exposure until formal diagnostic tests can be performed
3. Complete lifetime avoidance of all eggs and egg-containing products
4. Oral food challenge that can be performed at home

Answer: 2 - Referral to a pediatric allergist and to continue to refrain from egg exposure until formal diagnostic tests can be performed

Explanations:

- Egg allergy can potentially lead to fatal anaphylaxis. As such, it is important to refrain any egg-containing product until appropriate evaluation by a pediatric allergist if one suspects egg allergy.
- Complete avoidance of all eggs and egg-containing products without a formal diagnosis of egg allergy can be an unnecessary emotional or financial burden.
- Eggs are a nutritious source of protein, HDL cholesterol, and vitamin D. Depriving a non-allergic child of a readily available source of the previously mentioned nutrients can increase the risk of malnutrition.
- Oral food challenges are a gold standard for egg allergy diagnosis but they should only be performed under the supervision of a clinician due to a risk of anaphylaxis.

Mona Terbi

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Research Concepts:

Egg Allergy




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Question 346: A 5-day-old male is brought in for evaluation. The mother reports that he is breastfeeding well, about 20 minutes on each breast every 2 to 3 hours. He is voiding and stooling adequately. The patient's total bilirubin was 8 mg/dL two days ago on hospital discharge. On physical exam, the patient is markedly jaundiced with conjunctival icterus. An in-office neonatal jaundice meter estimates the total bilirubin to be 24.4 mg/dL. The patient is sent to the hospital for a comprehensive metabolic panel, which shows total bilirubin of 23.8 mg/dL and direct bilirubin of 16.3 mg/dL. What is the most appropriate next step?

Choices:

1. Start supplementing breastfeeds with formula
2. Admit the patient to neonatal intensive care for phototherapy
3. Perform an abdominal ultrasound on the right upper quadrant
4. Reassure the mother that the jaundice is related to breastfeeding and will resolve

Walid Terbi

Answer: 3 - Perform an abdominal ultrasound on the right upper quadrant

Explanations:

- Elevated total bilirubin should be quantified into direct and indirect.
- Elevated unconjugated bilirubin would be more consistent with hemolytic causes.
- Elevated conjugated bilirubin is a sign of hepatocellular or cholestatic disease.
- This should prompt a workup for obstructive causes of jaundice with bedside ultrasound.

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Moh'd Terbi

Research Concepts:

Bilirubinuria




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Question 347: A 15-year-old male was evaluated for recurrent urinary tract infections (UTIs) and diagnosed with vesicoureteral reflux (VUR) from the posterior urethral valves. Prophylactic antibiotics have not prevented recurrent UTIs. He has no complaints except ongoing constipation. The clinical examination is notable for a body mass index of 28 and a blood pressure of 124/76 mmHg. Laboratory workup is notable for a serum creatinine of 1.2 mg/dL and the estimated glomerular filtration rate (eGFR) of 66 mL/min/1.73 m2. A urinalysis shows 2+ protein, three white blood cells, and one red blood cell. His current medications are lisinopril, sulfamethoxazole/trimethoprim, and inhaled albuterol. Apart from considering surgical intervention for the VUR, which of the following is the best next management option?

Choices:

1. Increase the lisinopril dose
2. Add irbesartan
3. Add nitrofurantoin
4. Add a laxative

Moh'd Terbi

Answer: 4 - Add a laxative

Explanations:

- Bladder and bowel dysfunction (BBD) is a known risk factor for reflux nephropathy.
- BBD increases the risk of febrile, urinary tract infection (UTI) in children on antimicrobial prophylaxis for vesicoureteral reflux (VUR) as compared to those without BBD.
- BBD delays the resolution of UTI in children with VUR. BBD also increases the risk of postoperative UTI when compared to those without BBD.
- Some of the proven treatments for BBD include treating constipation; frequent and complete voiding; biofeedback plus or minus the use of anticholinergic medication or alpha-blockers; and continuous, intermittent catheterization in extreme cases.

Mohd Terbi

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Research Concepts:

Reflux Nephropathy




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Question 348: A 16-year-old male diagnosed with acute lymphoblastic leukemia presents to the emergency department with cough, brownish sputum, and fever. He has a history of bronchial asthma, which was previously well controlled with regular inhaled bronchodilators. He has never had such an episode before and believes that his cancer is spreading to his lungs now. He is taking oral chemotherapy medications and has shown a good response to therapy but has had prolonged neutropenia. Chest x-ray shows an infiltrate on the right lower lung zone. His vital signs are normal. Which of the following organisms is most likely responsible for the patient's condition?

Choices:

1. Streptococcus pneumoniae
2. Aspergillus fumigatus
3. Staphylococcus aureus
4. Mycoplasma pneumoniae

Moh'd Terbi

Answer: 2 - Aspergillus fumigatus

Explanations:

- Aspergillus species are causative organisms for fungal infection in immunocompromised individuals. Aspergillus fumigatus is the most common ubiquitous airborne fungus responsible for allergic bronchopulmonary aspergillosis (ABPA) in immunocompromised patients. Long duration of neutropenia and high dose corticosteroids are risk factors.
- Aspergillus fumigatus, a widely distributed spore-bearing fungus, causes multiple diseases in humans. These diseases include aspergilloma, different forms of hypersensitivity diseases, including ABPA, allergic bronchial asthma, bronchocentric granulomatosis, extrinsic allergic alveolitis, and invasive pulmonary aspergillosis.
- A. fumigatus has a very small spore (conidia) size (2-3 microns), which enables the spores to penetrate deeply into the lung. Spores are capable of withstanding extraordinary atmospheric conditions. The pigment of conidia also confers some protection against phagocytosis.
- In immunocompetent individuals, Aspergillus conidia are easily eliminated from the airway by innate immune system mechanisms, so no pulmonary fungal infection manifests. In immunocompromised individuals, Aspergillus conidia are not eliminated due to host immune defense imbalance, so they colonize airways, germinate into somatic hyphae and stimulate a chronic allergic inflammatory response.

Med-u-Tech

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Research Concepts:

Allergic Bronchopulmonary Aspergillosis

StatPearls Knowledge Base

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Moh'd Terbi

Question 349: A 26-week infant male is being evaluated in the delivery room. His Apgar scores were 2, 5, and 9 at 5, 10, and 15 minutes, respectively. He is transferred to the NICU on non-invasive positive pressure ventilation. His respiratory rate is 70/min with retractions. He requires up to 70% FiO2. An umbilical arterial catheter is placed to draw bloodwork. An arterial blood gas analysis shows a pH of 7.19, CO2 of 71 mmHg, pO2 of 24 mmHg, and a base deficit of -8. Which of the following is the next best step in the management of this patient?

Choices:

1. Transfuse 15 mL/kg of packed red blood cells to improve tissue oxygen delivery
2. Intubate and administer surfactant via endotracheal tube
3. Chest tube placement for resolution of spontaneous pneumothorax
4. High-frequency jet ventilation to improve pulmonary air leak from alveolar rupture

Mon'd Terbi

Answer: 2 - Intubate and administer surfactant via endotracheal tube

Explanations:

- This baby most likely has respiratory distress syndrome of the neonate (RDS). RDS is caused by inadequate surfactant production, which increases the surface tension of the lung within the small airways and alveoli, reducing the compliance of the lung.
- RDS is the most common cause of respiratory distress in premature infants. It occurs in 24,000 infants born in the United States annually. It is the most common complication of prematurity and can lead to significant morbidity in late preterm neonates and even mortality in very low birth weight infants.
- After birth, the management of a neonate with RDS includes exogenous surfactant therapy, assisted ventilation to provide positive airway pressure, supplementary oxygen, and supportive care, including thermoregulation, nutritional support, fluid, and electrolyte management. Specific treatment for surfactant deficiency is intratracheal surfactant therapy via an endotracheal tube.
- Less invasive surfactant administration is becoming more widespread, involving the administration of surfactant via a fine-bore catheter. Studies have shown this technique to reduce the need for mechanical ventilation and, subsequently, the incidence of bronchopulmonary dysplasia.

Mark Terhi

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Research Concepts:

Neonatal Respiratory Distress Syndrome

StatPearls Knowledge Base

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Moh'd Terbi

Question 350: A 12-year-old female presents with a 3-week history of uncoordinated movements, angry outbursts, restless behavior, and deterioration of academic performance. Her mother tells you that she was recently treated with antibiotics for a sore throat. Her exam is remarkable for slow writhing of the extremities with occasional violent, large movements of the upper extremities. She states that she has a need to move. What is the most likely diagnosis?

Choices:

1. Benign hereditary chorea
2. Tourette syndrome
3. Sydenham chorea
4. Attention-deficit/hyperactivity disorder

Moh'd Terbi

Answer: 3 - Sydenham chorea

Explanations:

- Choreoathetotic movements in association with akathisia and ballismus make the most likely diagnosis Sydenham chorea.
- This is seen after infection with group A beta-hemolytic Streptococcus and is the most common cause of new-onset chorea in this age group.
- Investigation for cardiac involvement with ECG and echocardiogram is indicated.
- Attention-deficit/hyperactivity disorder and conduct disorder are much less likely to have evolved over a short time period and typically are not associated with abnormal movements. Tourette syndrome is characterized by vocal and motor tics lasting more than 12 months with a fluctuating course. Benign hereditary chorea typically is not associated with mood disturbance or worsening cognitive ability.

Mon'd Terbi

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Research Concepts:

Sydenham Chorea




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Question 351: A 4-year old boy from the United States was recently diagnosed with chronic granulomatous disease. His provider advises the patient's parents to begin prophylactic treatment to prevent the rate of severe infections. Which drug regimen is most likely to be recommended?

Choices:

1. Amphotericin B and penicillin
2. Trimethoprim-sulfamethoxazole only
3. Trimethoprim-sulfamethoxazole and itraconazole
4. There is no prophylactic treatment given

Moh'd Terbi

Answer: 3 - Trimethoprim-sulfamethoxazole and itraconazole

Explanations:

- When chronic Granulomatous Disease (CGD) was first identified, affected children had near certain fatality, but now CGD can be managed with a higher survival rate.
- Management of CGD is based lifelong antibacterial and antifungal prophylaxis, early diagnosis of infection, and aggressive management of infectious complications. The standard prophylactic treatment for children with CGD is trimethoprim-sulfamethoxazole and itraconazole.
- Some countries also include interferon-gamma but this is not a globally accepted treatment. Clinicians practicing outside the United States often omit interferon-gamma.
- Studies have shown that these drugs dramatically reduce the rate of severe infections in children with CGD.

Mohd Terbi

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Research Concepts:

Chronic Granulomatous Disease




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Question 352: A mother presents with her icteric, 3-week-old daughter to the emergency department. She is exclusively breastfeeding her daughter who has an adequate amount of wet diapers and stool daily. Biliary atresia is suspected, and a serum sample for total and direct bilirubin is obtained. Which of the following statements is false regarding biliary atresia?

Choices:

1. Biliary atresia is the most common cause of conjugated hyperbilirubinemia in the newborn
2. The "triangular cord" sign is suggestive of biliary atresia
3. The presence of bile pigments in stools rules out biliary atresia
4. Patients have a favorable outcome if the Kasai procedure is performed before 2 months of age

Moh'd Terbi

Answer: 3 - The presence of bile pigments in stools rules out biliary atresia

Explanations:

- Biliary atresia is the most common cause of conjugated hyperbilirubinemia is neonates in developed countries, accounting for 20% to 30% of cases. The patient typically presents between 2 to 4 weeks of life with acholic stools and dark urine. The presence of bile pigments in the stools, however, does not rule out biliary atresia, especially in the initial stages. In biliary atresia, there is the involvement of both intra- and extrahepatic bile ducts.
- In conjugated hyperbilirubinemia, the direct portion of total bilirubin is more than 20% of the total bilirubin when total bilirubin is more than 5 mg/dL. Conjugated neonatal hyperbilirubinemia is always pathologic, and further evaluation is warranted to identify the underlying condition.
- The initial imaging study in a newborn suspected to have biliary atresia is abdominal ultrasonography, which will classically show an absent gallbladder and the "triangular cord" sign. The presence of a gallbladder does not rule out biliary atresia, as it may be atretic. The next step is a percutaneous liver biopsy, followed by an intraoperative cholangiogram. The Kasai procedure (hepatoportoenterostomy) reestablishes bile flow, and the outcome is best when performed before 8 weeks of life.
- Biliary atresia may occur in isolation or be part of a syndrome known as the biliary atresia splenic malformation syndrome. This syndrome is characterized by polysplenia or asplenia associated with other malformations such as situs inversus, malrotation of intestines, interrupted inferior vena cava and portal vein, and hepatic artery anomalies.

Mohamed Tarek

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if

desired).

Research Concepts:

Biliary Atresia




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Moh'd Terbi

Question 353: Which of the following is a rare complication in a patient with autosomal dominant polycystic kidney disease?

Choices:

1. Cardiac disease
2. Renal stones
3. Subarachnoid hemorrhage
4. Urinary tract infections

Moh'd Terbi

Answer: 3 - Subarachnoid hemorrhage

Explanations:

- Despite the potential for death, subarachnoid hemorrhage is a very rare occurrence in patients with autosomal dominant polycystic kidney disease.
- The aneurysms in the brain do not always rupture, as was once believed.
- The major cause of death in these patients is cardiac disease.
- Cerebral aneurysms are serious but in fact are very rare. Rupture is most common in patients with uncontrolled hypertension.

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Moh'd Terbi

Research Concepts:

Polycystic Kidney Disease




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Question 354: A 17-year-old female patient presents with a complaint of a left-sided throbbing headache for the past 4 hours. She states that she had some blurry vision for about 15 minutes prior to the onset of the headache that has resolved. She denies any other symptoms or aggravating factors. She reports that she has had this type of headache multiple times throughout grade school. She says the pain is bearable but would like to have some medication. What medication could be chosen as a treatment for her headache?

Choices:

1. Ibuprofen
2. Prochlorperazine
3. Dihydroergotamine
4. Tramadol

Moh'd Terbi

Answer: 1 - Ibuprofen

Explanations:

- This patient classically presents with an acute migraine.
- For a mild to moderate migraine not associated with nausea and vomiting, simple analgesics such as nonsteroidal anti-inflammatory drugs (NSAIDs) such as ibuprofen and acetaminophen are recommended.
- This patient's headache can be classified as mild-moderate as she has no other associated symptoms such as nausea, vomiting, or photophobia. For moderate to severe migraines, NSAIDs and triptans are the mainstay choices.
- Antiemetics can be used if a patient with an acute migraine presents with associated nausea/vomiting. Dihydroergotamine and prochlorperazine are not commonly used as 1st line agents.

Mohd Terbi

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Research Concepts:

Migraine Medications




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Question 355: A 13-year-old boy is brought in for behavioral concerns. He is disrespectful towards his teachers and parents, does not obey household or school rules, refuses to take part in chores, is disruptive in class, ran from school without permission, set a fire in the woods with his friends, and most likely is using drugs. Which of the following will be an evidence-based treatment for him?

Choices:

1. Start him on an antipsychotic medication
2. Start him on an antidepressant
3. Start him on a stimulant
4. Start cognitive behavior therapy

Moh'd Terbi

Answer: 4 - Start cognitive behavior therapy

Explanations:

- The adolescent in this vignette is displaying delinquent behaviors or conduct disorder. There is not enough information available to diagnose aggression, psychosis, attention deficit hyperactivity disorder, or depression.
- Such behavior may be manifest as oppositional defiant behaviors in early childhood and may be seen before age 10 years.
- Pharmacological treatment is not recommended as first-line treatment for delinquency or conduct problems.
- Evidence-based psychosocial interventions such as cognitive-behavioral therapy are the first-line treatment. A referral should be made for family or community based mental health services.

Mohud Terbi

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Research Concepts:

Developmental Stages of Social Emotional Development In Children




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Question 356: A 2-year-old boy is brought to the clinic with a hairy plaque on the left shoulder. Physical examination reveals a well-demarcated pigmented plaque, covered with dark hair. Histological examination of skin biopsy demonstrates badly-defined smooth muscle bundles, which are randomly oriented. These bundles intermingle with collagen fibers. Based on clinical and histological findings, what is the most likely diagnosis?

Choices:

1. Becker hamartoma
2. Piloleimyoma
3. Congenital smooth muscle hamartoma
4. Nevus pilosus

Moh'd Terbi

Answer: 2 - Piloleimyoma

Explanations:

- Piloleimyoma resembles clinically a congenital smooth muscle hamartoma.
- Both conditions are seen in children
- Histological examination is necessary to differentiate both conditions.
- Unlike piloleimyoma, the smooth muscle bundles of the congenital smooth muscle hamartoma are well-defined and are separated from surrounding collagen fibers by a characteristic clear space.

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Moh'd Terbi

Research Concepts:

Congenital Smooth Muscle Hamartoma




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Question 357: A 17-year-old male presents with fever and chills that were not relieved with acetaminophen. According to parents, the fever started three days ago when the patient returned from school. He was fine prior to the fever. One of the patient's friends had upper respiratory tract infection the day he developed a fever. Past medical history is hemoglobin SC disease. He is in no acute distress. Cardiac, lung, and abdominal exam are unremarkable. After two days of hospitalization, the patient developed altered mental status and respiratory failure. He was immediately started on mechanical ventilation and IV antibiotics. The patient died 48 hours later due to cardiorespiratory failure. What would the peripheral blood of this patient show?

Choices:

1. Bite cells
2. Howell-Jolley bodies and sickle cells
3. Hairy cells and sickle cells
4. Sickle cells and bite cells

Moh'd Terbi

Answer: 2 - Howell-Jolley bodies and sickle cells

Explanations:

- The peripheral smear of asplenic patients show Howell-Jolley bodies, pitted erythrocytosis, monocytosis, and lymphocytosis.
- After the peripheral blood shows these cells, spleen scintigraphy can be done to confirm the diagnosis
- If spleen scintigraphy is not available to confirm asplenia, sonogram of the abdomen, CT abdomen, and MRI could be done.
- Howell-Jolly bodies are present because the spleen has the inability to remove them.

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Moh'd Terbi

Research Concepts:

Asplenia




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Question 358: A 15-year-old previously healthy male is brought to the emergency department with fever and odd behavior for four days. His mother found him seizing in his bedroom for about 5 minutes before being brought to the emergency department. The patient's interview reveals hallucinations, unusual thought content, and disorientation. A tentative diagnosis of anti-NDMAR encephalitis is being considered. The overdose of which of the following medications has the most similar clinical presentation to this condition?

Choices:

1. Benzodiazepines
2. Barbiturates
3. Opioids
4. Dissociative drugs

Moh'd Terbi

Answer: 4 - Dissociative drugs

Explanations:

- The clinical manifestation of anti-NMDAR encephalitis is similar to the effects of medications like ketamine or phencyclidine.
- Both ketamine and phencyclidine are common street drugs.
- Benzodiazepines produce drowsiness, slurred speech, loss of coordination, difficulty in thinking clearly, memory loss, but does not produce hallucinations presenting in the patient.
- Barbiturates produce slow thinking, emotional instability, slurred speech, poor physical coordination, but do not produce hallucinations. Opioids produce sedation, nausea, vomiting, dizziness, constipation, respiratory depression. The patient in the vignette does not have this clinical picture.

Mohd Terbi

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Research Concepts:

Anti-NMDA Receptor Encephalitis In Children




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Question 359: A 16-year-old male patient presents to the clinic for follow-up. Five days ago, he was diagnosed with acute otitis media and given a one-week course of oral amoxicillin. Today he is feeling much better overall and denies any ear complaints, fevers, or chills. He is afebrile, and his vital signs are within normal limits. Blood work obtained during this visit reveals a white blood count (WBC) 9 x 10^3/uL (4.5-11 x 10^3/uL), hemoglobin of 8 g/dL (11-16 g/dL), hematocrit 26.5% (37-50%), platelets 222 10^3/uL (150-450 x 10^3/uL), sodium 138 mEq/L (134-146 mEq/L), potassium 4 mEq/L (3.5-5.1 mEq/L), chloride 89 mEq/L (92-109 mEq/L), blood urea nitrogen 11 mEq/L (8-25 mEq/L) and creatinine 0.9 mEq/L (0.5-1.5 mEq/L). His direct antiglobulin study is 3+. What is the next best step in management?

Choices:

Mohit Terkhi

1. Refer to hematology
2. Discontinue amoxicillin and start amoxicillin-clavulanate
3. Discontinue amoxicillin
4. Admit to hospital for blood transfusion

Answer: 3 - Discontinue amoxicillin

Explanations:

- The correct answer is the discontinuation of amoxicillin. The patient has most likely developed drug-induced autoimmune hemolysis from the administration of amoxicillin.
- Discontinuation of the offending agent in suspected drug-induced autoimmune hemolysis is often adequate for management. Follow-up testing with a repeated antiglobulin test should be performed to ensure resolution.
- Changing to amoxicillin-clavulanate is incorrect, as drug-induced autoimmune hemolysis is likely, and continued exposure to the offending agent may worsen the anemia.
- Admission to the hospital for transfusion is not correct, as the patient is hemodynamically stable and above the threshold of 7 g/dL that is recommended for transfusion.

Mon'd Terbi

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Research Concepts:

Coombs Test




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Question 360: A 5-year-old previously healthy female presents with fever for three days, initially evaluated by his pediatrician and discharged home as a viral illness. On the following day, the patient presents with seizures without fever and during initial evaluation in the emergency department, presents with another episode of generalized seizure that lasted 3 minutes. Lumbar puncture is performed, and PCR is ordered for the most common viral etiologies. Which of the following viruses, if found, should raise the highest suspicion for anti-NMDAR encephalitis?

Choices:

1. West Nile virus
2. Herpes simplex virus
3. Cytomegalovirus
4. Enterovirus

Moh'd Terbi

Answer: 2 - Herpes simplex virus

Explanations:

- According to recent epidemiologic studies, and mouse models. Herpes simplex virus can trigger anti-NMDAR receptor encephalitis in 27% of cases within 2 months of initial infection.
- This autoimmune encephalitis is caused by antibodies against NMDAR, and its clinical effect is similar to phencyclidine or ketamine, which are non-competitive NMDAR antagonists.
- In 50% of cases, a complete recovery with minor deficits is expected, 47% of cases will have a partial recovery with major deficits and 3% mortality is reported.
- West Nile virus is a common cause of encephalitis in children but has not been linked to anti-NMDAR encephalitis. Cytomegalovirus is a less common cause of encephalitis but has not been associated with autoimmune encephalitis. Enterovirus is the most common viral cause of encephalitis in children, but not linked to anti-NMDAR encephalitis.

Mona Terbi

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Research Concepts:

Anti-NMDA Receptor Encephalitis In Children




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Question 361: A 16-year-old male presented with chronic diarrhea, crampy epigastric pain, and vomiting. His symptoms have been present for the past 2 months but his frequency of vomiting has increased for the last 1 week. He also reports of undocumented weight loss. On physical examination, there is conjunctival pallor and mild abdominal distention. The rest of the examination is unremarkable. His laboratory analysis shows a hemoglobin level of 9 g/dL, a total protein level of 4 g/dL, a white blood cell (WBC) count of 15000 cells/mm. His differential WBC count reveals increased eosinophils. His stool is negative for ova and parasites. A small bowel biopsy reveals normal villi with edematous lamina propria infiltrated with eosinophils. Which of the following is the most appropriate next step in management?

Choices:

Moh'd Terbi

1. Administer intravenous antibiotics
2. Dietary therapy
3. Repeat endoscopy with biopsy
4. Treat with antidiarrheal agents

Answer: 2 - Dietary therapy

Explanations:

- The patient has eosinophilic gastroenteritis. It is an inflammatory disorder that presents with variable degrees of infiltration of eosinophils within the gastrointestinal tract. An empiric elimination diet is the first step. Proper counseling about nutrition and allergen avoidance is necessary.
- Glucocorticoids are the main treatment option after the patient fails an elimination diet. With the improvement of symptoms, steroids should be tapered rapidly.
- Some case reports suggested leukotriene antagonists (montelukast) as an effective treatment, while others do not.
- Omalizumab (anti-IgE antibody) showed significant improvement in symptoms, and eosinophilia in patients with IgE mediated allergy.

Moh'd Terbi

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Research Concepts:

Eosinophilic Gastroenteritis




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Question 362: A 6-year-old girl appears to "be in her own world," ignoring adults and other children. She can entertain herself for hours by spinning around on the floor or playing a specific game. She has never acquired language skills, and she is easily agitated by loud noises. There are no physical deformities, and her physical exam is normal except for some minor coordination issues. What is the recommended therapeutic intervention?

Choices:

1. Applied behavior analysis
2. Cognitive therapy
3. Antidepressants
4. Physical therapy

Moh'd Terbi

Answer: 1 - Applied behavior analysis

Explanations:

- For autism spectrum disorders (ASD) applied behavior analysis can be used. It can be adapted for each individual, can be done at home or school, and can include one-to-one play therapy.
- One out of 68 children has autism spectrum disorders.
- According to the Diagnostic and Statistical Manual of Mental Disorders criteria, patients must present with social communication and social interaction deficits and restricted, repetitive patterns of behavior, interests, or activities.
- The primary treatment goals are to decrease patient deficits and family distress while increasing functional independence.

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Moh'd Terbi

Research Concepts:

Autism Spectrum Disorder




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Question 363: A healthy 16-year-old female presents with a cough and sore throat for two days. She is up to date on immunizations. Her physical exam shows enlarged tonsils. Her uvula is midline. She does not have any tender lymphadenopathy. Her temperature is 37.7 C (99.9 F). She has no trismus or drooling, and she is tolerating liquids. What is the best initial step in the management of this patient?

Choices:

1. Throat swab
2. Supportive care and no further testing
3. Heterophile antibody test
4. Amoxicillin for 10 days

Moh'd Terbi

Answer: 2 - Supportive care and no further testing

Explanations:

- This patient has a straight forward uncomplicated tonsilitis.
- This patient's score on the Centor Criteria is a 1 for exudates on her tonsils. However, her age warrants zero points (she is between 15 and 44). She does not have a fever or tender adenopathy.
- She notes a cough. For patients scoring a 0 or 1, guidelines do not recommend any further testing or antibiotic therapy. Therefore supportive care with pain control.
- In the case of trismus, inability to swallow, uvula deviation, drooling, or muffled voice, computed tomography (CT) imaging may show an abscess or epiglottis. The majority of tonsilitis patients do not require any imaging. This patient does not warrant empiric antibiotics. The Centor Criteria were created in 1981 to cut down on antibiotic overuse in tonsilitis patients. Only a patient with a score of 4 or more should be given empiric antibiotics as their pre-test probability of Group A streptococcus is greater than 50%.

Mohit Tehri

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Research Concepts:

Tonsillitis




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improvement.

Moh'd Terbi

Question 364: A 6-year-old female is brought in with a 4-week history of fever, occurring regularly twice a day, swelling of her joints, and a limp. There is a faint, pink rash that occurs with the fever. She has no eye or throat pain. Her lungs are clear, but the heart sounds are muffled, and there is pulsus paradoxus. Her white blood cell count is 20,000/mm3. Antinuclear antibodies (ANA) and rheumatoid factor (RF) are negative. What is the most likely severe complication of the patient's diagnosis?

Choices:

1. Macrophage activation syndrome
2. Acute leukemia
3. Postinfectious arthritis
4. Aplastic crisis

Moh'd Terbi

Answer: 1 - Macrophage activation syndrome

Explanations:

- Juvenile idiopathic arthritis is the new name for juvenile rheumatoid arthritis or Still disease.
- The presentation can be systemic (as in this case), pauciarticular, or with polyarthritis. An extremely severe complication is macrophage activation syndrome, due to the uncontrolled activation and proliferation of T lymphocytes and macrophages.
- Systemic disease can involve serositis as with the pericarditis seen in this case.
- The most common complications of JIA are leg-length discrepancy and joint contracture.

Mohd Terbi

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Research Concepts:

Juvenile Idiopathic Arthritis




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Question 365: A 17-year-old male presents with complaints of itchy red lesions on his abdomen. He has no past medical history and is not on any medications. He does not have any other complaints. He denies fever, chills, or malaise. He is an avid hiker but denies any known contact with insects. On examination, the patient has scattered erythematous papules along his abdomen above his waistline, with overlying excoriations. A linear pattern of lesions is noted, with eschar formation in some lesions. His vital signs are within normal limits, and he has no other abnormal findings. What is the best treatment for this patient?

Choices:

1. Diphenhydramine and topical corticosteroids
2. Cephalexin and diphenhydramine
3. Permethrin cream
4. Petroleum jelly over the lesions

Moh'd Terbi

Answer: 1 - Diphenhydramine and topical corticosteroids

Explanations:

- Chigger bites are usually treated with symptomatic management involving oral antihistamines or topical corticosteroids.
- This patient presents with a typical pattern for chigger bites, with likely exposure during his outdoor activities. Even though he does not identify insect exposure, chigger bites are the most likely cause of his presentation.
- Though complications from chigger bites are rare, they can occur. The diagnosis of chigger bites should not prevent one from considering cellulitis, abscesses, or other potentially life-threatening causes of rashes. Patients with chigger bites and associated trombiculosis (like this patient) do not have any systemic symptoms.
- If systemic symptoms are present, consider alternate causes, secondary cellulitis, or transmission of other diseases from larval bites, such as scrub typhus.

Mona Terbi

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Research Concepts:

Chigger Bites




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Question 366: A 4-year-old female is seen in the emergency department with 1 week of cough, rhinorrhea, and sore throat. Over the last 4 days, she has developed a right sided neck mass. Her pertinent vital signs and lab findings include a maximum temperature of 101.4 F with a WBC of 17 x 10^9. CT imaging was obtained showing a well-circumscribed cystic appearing anterior to the sternocleidomastoid muscle with associated fat stranding. What would the appropriate steps in management?

Choices:

1. Immediate incision and drainage
2. Treatment with intravenous antibiotics followed by excision of the branchial cleft cyst during admission
3. Treatment with intravenous antibiotics, transition to oral antibiotics, discharge from the hospital and schedule outpatient removal of the branchial cleft cyst
4. Immediate surgical excision

Moh'd Terbi

Answer: 3 - Treatment with intravenous antibiotics, transition to oral antibiotics, discharge from the hospital and schedule outpatient removal of the branchial cleft cyst

Explanations:

- Incision and drainage should be avoided as it makes the eventual surgical excision more difficult
- The infected branchial cleft cyst should be treated with antibiotics but surgical excision should be deferred until the infection has had time to completely clear, at least 6 weeks.
- The patient should have time to recover from an acute infection prior to surgical excision
- The branchial cleft cyst should not be excised during the acute stages of infection.

Mahdi Terbi

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Research Concepts:

Branchial Cleft Cysts




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Question 367: A 17-year-old female presents with a 5-day history of vague lower abdominal pain and increased urinary urgency and frequency. She has also noticed bubbles of air in her urine, which is malodorous. She thinks she has lost about 5 pounds (2 kg) over the past 2 months because she is simply not hungry. Further, every time she eats she develops abdominal pain. The patient denies any trauma, use of medications, or any past serious illness. To further evaluate this patient, what is the study of choice?

Choices:

1. Blood cultures
2. Colonoscopy
3. CT abdomen
4. Dye injection in the rectum

Moh'd Terbi

Answer: 3 - CT abdomen

Explanations:

- This patient may have Crohn disease and has developed an enterovesical fistula.
- Sometimes the inflamed bowel will fistulize with the bladder and present with air in the urine, pneumaturia.
- One can do cystoscopy, fistulography, or colonoscopy to look for a fistula within the bladder.
- However, CT can help assess for Crohn disease and possible fistulas. CT scan is very sensitive for peri-fistular inflammation.

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Moh'd Terbi

Research Concepts:

Enterovesical Fistula




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Question 368: A 3-month-old male is brought by his mother due to excessive crying and tachypnea for the past month. The patient visited two different hospitals during the past month and was given intravenous antibiotics for a suspected lung infection, but the patient's condition has not improved. For the past month, it has been difficult to feed the patient as he is always crying. His mother is also worried that his fast breathing may cause him to choke on his milk. He was born full-term via vaginal delivery with no complications. His medical history is insignificant, and he takes no medications. His family history is significant for diabetes type 2 in his father and sickle cell disease in his mother. On examination, temperature is 36.4 C, pulse is 122 beats/min, and respiratory rate is 36 breaths/min. The patient seems to be irritable and in distress. He is pale and mildly sweating. Cardiovascular examination reveals a grade 3 systolic murmur at the left sternal border. Abdominal examination is unremarkable. Chest X-ray revealed cardiomegaly and signs of pulmonary congestion. Electrocardiogram shows very deep q waves in leads I, aVL, and V3-V6. An echocardiogram revealed normal cardiac contractility and diastolic flow into the pulmonary artery. Cardiac CT angiogram reveals the diagnosis. What is the best next step in the management of this patient?

Mohit Tariq

Choices:

1. Surgical correction
2. Propanolol
3. Sildenafil
4. Conservative management

Answer: 1 - Surgical correction

Explanations:

- This 3-month-old male presenting with excessive crying, tachypnea, pallor, and sweating with evidence of diastolic flow into the pulmonary artery on echocardiogram likely has an anomalous origin of a coronary artery from the pulmonary artery.
- Typically, coronary arteries should originate from the aorta (aortic sinus). An anomalous origin of a coronary artery from the pulmonary artery occurs when a coronary artery abnormally arises from the pulmonary artery and occurs in around 0.4% of the population.
- The cardiac tissue supplied by the coronary artery that has abnormally risen from the pulmonary artery may be susceptible to ischemia because the anomalous coronary artery has a low perfusion pressure and carries blood with low oxygen because it originates from the pulmonary artery.
- The most common coronary artery that may abnormally arise from the pulmonary artery is the left coronary artery, a condition known as Bland-White-Garland syndrome. Affected patients may present with myocardial ischemia, irritability, poor feeding, pallor, and tachypnea at the age of four to six weeks, but the presentation may be delayed.

Moni's Tech

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Research Concepts:

Coronary Artery Anomalies



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Moh'd Terbi

Question 369: A 9-year-old female is noted to have brown urine for three days. She had been generally healthy until she had pharyngitis three weeks ago. There are periorbital edema and elevation of the blood pressure. Urinalysis shows white and red cell casts with 2+ protein. What would be most likely on renal biopsy?

Choices:

1. Normal light microscopy with effacement of the podocytes on electron microscopy
2. Wire loop lesions and hypercellularity
3. Subepithelial humps and hypercellularity
4. Segmental sclerosis with normocellularity

Moh'd Terbi

Answer: 3 - Subepithelial humps and hypercellularity

Explanations:

- The patient most likely has post-streptococcal glomerulonephritis.
- There is proliferation of mesangial and endothelial cells with infiltration of monocytes and neutrophils.
- The subendothelial humps are deposits of immune complexes.
- The treatment for PSGN is mostly supportive care. Antibiotics can be given if the pharyngitis is still present, but this won't necessarily help the glomerulonephritis. Loop diuretics can be given to help reduce the edema.

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Moh'd Terbi

Research Concepts:

Poststreptococcal Glomerulonephritis




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Question 370: A 45-year-old woman comes in for her wellness check-up. She has a 13-year-old son who is going to be starting high school next year and often hears him and his friends discuss ways to prepare for high school, so they fit in. The mother is concerned her son may use drugs as he often talks about the partying. She wants to know what she can do it prepare him to avoid smoking cannabis, given its surge in popularity among teenagers. What is the most common reason for marijuana use among teenagers and young adults?

Choices:

1. Anxiety reduction
2. Experimentation
3. Social conformity
4. Pleasurable sensation

Moh'd Terbi

Answer: 3 - Social conformity

Explanations:

- Research shows college students and young adults use marijuana for the purpose of stress management (12%). This indication for usage can be a predictor of chronic consumption and effort to treat a primary psychiatric disorder.
- Twenty-nine percent of the group report they use marijuana for the purpose of experimentation.
- Forty-two percent of this group state they use cannabis to conform socially.
- Twenty four percent of this group use marijuana for the purpose of enjoyment.

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Moh'd Terbi

Research Concepts:

Cannabis Use Disorder




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Question 371: A patient with mild, persistent asthma has been well controlled with low-dose inhaled corticosteroids. He presents for follow up complaining of some limitation with normal activities and needing albuterol for symptom relief 3 to 4 days per week over the past month. Which of the following is the preferred next step?

Choices:

1. Begin an oral corticosteroid burst
2. Medium-dose inhaled corticosteroid
3. Add a leukotriene receptor antagonist
4. Begin omalizumab

Moh'd Terbi

Answer: 2 - Medium-dose inhaled corticosteroid

Explanations:

- This patient is currently on step 2 of asthma controller therapy, and his level of control for this scenario is "not well controlled." Therefore the next step (step 3) is a medium-dose inhaled corticosteroid.
- A less preferred option is adding a leukotriene receptor antagonist, such as montelukast, to the low-dose inhaled corticosteroid.
- Inhaled corticosteroids are considered to be superior to leukotriene receptor antagonists when used as monotherapy.
- If good control is demonstrated for at least 3 months, a trial of stepped-down treatment is appropriate. Close follow-up is needed to assess the effectiveness of the change in treatment.

Mohd Terbi

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Research Concepts:

Asthma




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Question 372: A 10-year-old male presents for a routine health maintenance examination. He has a 5-year history of frequent sinus and pulmonary infections. He had an anaphylactic reaction to a blood transfusion a few years ago when he lost a lot of blood following a motor vehicle collision. His vital signs are a temperature afebrile, blood pressure of 118/69 mmHg, and a pulse of 67 bpm. Physical examination is unremarkable. The lungs are clear to auscultation. A complete blood count is within normal limits. After extensive testing, the patient is diagnosed with severe IgA deficiency. Which vaccine is acceptable in this patient?

Choices:

1. Oral polio vaccine
2. Bacille Calmette-Guerin vaccine
3. Yellow fever
4. Pneumococcal vaccine

Moh'd Terbi

Answer: 4 - Pneumococcal vaccine

Explanations:

- In patients with severe IgA deficiency, certain live viral vaccines especially oral polio vaccine, Bacille Calmette-Guerin, and yellow fever are contraindicated.
- Patients with humoral immunodeficiencies can develop disseminated infections when they are given live vaccines.
- Pneumococcal vaccine and Hemophilus influenza B are specifically recommended for patients with severe IgA deficiency to help reduce the risk of recurrent sinopulmonary infections.
- For patients with partial IgA deficiency who are asymptomatic, there are no special restrictions on vaccine use.

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Moh'd Terbi

Research Concepts:

IgA Deficiency




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Question 373: A thin 15-year-old white girl presents with right upper quadrant pain that radiates to her back. She has had intermittent nausea and vomiting every time she eats a fatty meal. She claims that her younger sister also has the same symptoms. While waiting for the blood work, a quick bedside ultrasound of the right upper abdomen reveals several intraluminal echogenic foci with a clean acoustic shadow. What is the likely diagnosis?

Choices:

1. Sickle cell anemia
2. Thalassemia
3. Hereditary spherocytosis
4. Hemophilia

Moh'd Terbi

Answer: 3 - Hereditary spherocytosis

Explanations:

- Hereditary spherocytosis is a familial hemolytic disorder with a range of presentations. The hallmark of the disorder is the microspherocytes, which are caused by loss of membrane surface area and increased osmotic fragility of red cells.
- The major complications include aplastic crises, cholecystitis, or cholelithiasis. Many cases of gallstones present early in life and there is usually a family history.
- Spectrin deficiency leads to loss of red cell surface area and leads to spherical red cells.
- Gallstones early in life may be the first clue to this red cell disorder and early cholecystectomy is not unusual.

Mahdi Terbi

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Research Concepts:

Hereditary Spherocytosis




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Question 374: A 5-month-old female is brought in with lethargy, a weak cry, and poor feeding. There has been no fever, congestion, vomiting, or diarrhea. The infant has not had a bowel movement in 3 days. Normally, the patient takes 6 ounces per feeding but only has been taking 2 ounces. The mother is concerned because the infant has been unable to hold her head up and has been less active. Past medical history is unremarkable. The delivery was uncomplicated, and neonatal screening and vaccinations are up to date. Exam shows no fever, normal vital signs, and no obvious distress. The child is alert, the oral mucosa is clear, and the anterior fontanelle is flat. The cardiopulmonary exam is normal. The abdomen is soft without masses. Neurologic exam shows reactive pupils, decreased tone, and decreased gag. There is notable head lag and diminished deep tendon reflexes. What is the most appropriate test?

Choices:

Moh'd Terbi

1. Creatine kinase
2. Lumbar puncture
3. Thyroid function tests
4. Stool for botulinum toxins

Answer: 4 - Stool for botulinum toxins

Explanations:

- Acquired hypotonia in an infant can be secondary to hypothyroidism or infantile botulism.
- Neonatal screening for hypothyroidism makes this less likely.
- Infantile botulism is diagnosed by testing the stool for the toxin.
- Clinical suspicion must be high because obtaining a sample may take time due to constipation, and the lab requires health department involvement.

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Research Concepts:

Moh'd Terbi

Infantile Botulism




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Question 375: A 9-month-old male from Central America is brought to the emergency department with a 6-hour history of intermittent, inconsolable crying and hugging his knees to his abdomen. He has had two bloody stools and vomiting. The infant is irritable with a temperature of 38.5 C. The abdomen seems tender, and the child continues crying. What is the best initial diagnostic test?

Choices:

1. Stool for giardia antigen, ova, and parasites
2. Air contrast enema with a baseline scout decubitus view
3. Abdominal ultrasound
4. Plain radiograph of the abdomen

Moh'd Terbi

Answer: 3 - Abdominal ultrasound

Explanations:

- The patient, being between the ages of 6 months and 4 years, most likely has ileocolic intussusception.
- The history is consistent with this diagnosis, and occasionally a sausage-shaped mass can be palpated in the right upper quadrant. Plain radiographs may be helpful to exclude perforation or when ultrasound is not immediately available and can show characteristic bowel obstruction. The "target sign," consisting of two concentric radiolucent circles superimposed on the right kidney, represents peritoneal fat surrounding and within the intussusception. The "crescent sign" is a soft tissue density representing the intussusceptum projecting into the gas of the large bowel, obscured liver margin, or lack of air in the cecum.
- Air, saline, or barium enema can reduce the intussusception or make the diagnosis but are not usually the first study ordered because there is a risk of bowel rupture. Prior to the enema, the patient must be cleared for surgery. There is no preparation required for an abdominal ultrasound.
- Bowel perforation must be excluded prior to radiologic intervention. Air has the least incidence of perforation.

Wen-a Terki

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Research Concepts:

Child Intussusception



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Moh'd Terbi

Question 376: A patient of childbearing age presents with amenorrhea. She has had a normal puberty and has normal anatomy. Her thyroid stimulating hormone, prolactin, and follicle stimulating hormone levels are normal, and a pregnancy test is negative. What is the next step in management?

Choices:

1. Brain MRI
2. A progestin challenge test
3. Karyotyping
4. Psychological evaluation

Moh'd Terbi

Answer: 2 - A progestin challenge test

Explanations:

- Progestin challenge testing distinguishes between estrogen deficiency and normal or excess estrogen.
- The test looks for the presence or absence of withdrawal bleeding and the presence or absence of the induction of menses.
- Withdrawl bleeding on a progestin challenge test confirms anovulation as the cause of amenorrhea.
- Based on the algorithm, the possibilities include polycystic ovarian syndrome, Asherman syndrome, hypothalamic amenorrhea, eating disorders, stress, and medications.

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Moh'd Terbi

Research Concepts:

Secondary Amenorrhea




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Question 377:

A mother presents with her 5-month-old son for evaluation of red bumps on his cheeks that first appeared seven days ago. Physical examination demonstrates scattered erythematous papules and a few pustules on the cheeks. What is the most appropriate treatment option?

Choices:

1. Topical clindamycin and benzoyl peroxide
2. Oral erythromycin
3. Topical retinoid
4. Oral tetracycline

Moh'd Terbi

Answer: 1 - Topical clindamycin and benzoyl peroxide

Explanations:

- Treatment of infantile acne involves retinoids, benzoyl peroxide, and antibiotics.
- If lesions are inflammatory, such as with this patient, a combination of benzoyl peroxide and a topical antibiotic is most appropriate.
- If lesions are comedonal, a topical retinoid would be more beneficial.
- Severe, inflammatory infantile acne often requires oral antibiotics such as erythromycin or trimethoprim-sulfamethoxazole. Tetracycline antibiotics should be avoided in children eight years of age and younger because they may cause discoloration of the developing permanent teeth.

Mohd Terbi

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Research Concepts:

Infantile Acne




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Question 378: A patient presents to the clinic 7 weeks after a flu shot. She claims that 3 weeks after the shot, she felt itching in her upper arm and then developed a rash. She denies any recent infection, travel, or use of medications. Examination reveals a well-defined rash covered with violaceous, shiny papules in a linear distribution approximately 3 cm in length. The provider feels that this is an isomorphic response. Which of the following skin disorders can manifest with such a reaction?

Choices:

1. Lichen planus
2. Herpes simplex
3. Atopic dermatitis
4. Pityriasis rosea

Moh'd Terbi

Answer: 1 - Lichen planus

Explanations:

- Lichen planus is an inflammatory condition. It may arise de novo or may occur after traumatic insult to the skin such as with any injection. Lichen planus is associated with the Koebner phenomenon (isomorphic response).
- The Koebner phenomenon is the appearance of a new skin lesion following some type of injury.
- The lesion can be reproduced by different methods of injury and has the same clinical features as the patient's original skin disorder. When caused by scratching, a linear pattern often develops.
- The Koebner phenomenon may occur 3 days to 2 years after the initial injury. Besides psoriasis, one also can see the isomorphic response in patients with vitiligo and lichen planus. Almost any type of skin injury can elicit this reaction.

Mohit Terdal

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Research Concepts:

Lichen Planus




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Question 379: A healthy 4-year-old girl is seen for a three-week-old rash that first appeared under her right arm and slowly began to encompass the right side of her thorax. Upon examination she seems cheerful and free of discomfort. What is the most likely diagnosis?

Choices:

1. Toxic erythema
2. Miliaria
3. Atopic dermatitis
4. Asymmetric periflexural exanthem of childhood

Moh'd Terbi

Answer: 4 - Asymmetric periflexural exanthem of childhood

Explanations:

- Asymmetric periflexural exanthem is a self-limiting condition, the etiology of which is unknown.
- Girls are affected almost twice as frequently as boys.
- It occurs most frequently in the spring and winter. There may be a preceding viral infection.
- No treatment is required.

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Research Concepts:

Mohit Tehlan

Asymmetric Periflexural Exanthem In Childhood




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Question 380: A 5-month-old is brought in by his parents for recurrent diarrhea and vomiting. The infant was given formula 12 hours ago but now appears pale and has acrocyanosis. Which of the following statements about this scenario is correct?

Choices:

1. The most likely etiology is an IgE hypersensitivity to formula
2. The most likely etiology is a non-IgE hypersensitivity to formula
3. The most likely etiology is a cardiac condition
4. Skin testing is needed

Moh'd Terbi

Answer: 2 - The most likely etiology is a non-IgE hypersensitivity to formula

Explanations:

- The remote reaction to the feeding makes this a late food reaction.
- This most likely is due to a non-IgE mediated hypersensitivity to cow's milk protein.
- The reaction is mediated by sensitized T helper cells.
- Associated symptoms include failure to thrive, severe reflux of formula, and chronic diarrhea.

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Moh'd Terro

Research Concepts:

Delayed Hypersensitivity Reactions




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Question 381: A 10-month-old girl presents with a fever and cough. Her medical history is significant for requiring antibiotics on three occasions for otitis media in the past six months. The physical examination reveals a child with normal growth and development who is febrile with a temperature of 101 F (38.3 C) and mildly tachypneic with a respiratory rate of 25/minute. Crackles are detected in her left lower lobe. A complete blood count is unremarkable with a normal white blood cell count and a normal differential on the white blood cell profile. Chest x-ray is consistent with pneumonia. An immunoglobulin profile reveals that she has very low IgG with borderline low IgA and IgM. Given the most likely diagnosis, which of the following best describes this infant's condition?

Choices:

1. It is an X-linked immunodeficiency disorder.
2. Recovery of antibody production resumes by two to six years of age.
3. It is vertically transmitted to the child from the mother.
4. It composes 12% of primary immunodeficiencies in the United States.

Mon'd Terbi

Answer: 2 - Recovery of antibody production resumes by two to six years of age.

Explanations:

- Transient hypogammaglobulinemia of infancy (THI) composes 2% of primary immunodeficiencies in the United States.
- THI is characterized by the inability to produce IgG. Recovery of antibody production resumes by two to six years of age.
- While IgA and IgM levels may be low, they are detectable in patients with THI.
- In patients with Bruton disease, there is the presence of agammaglobulinemia (IgG, IgA, IgM), infections start much early in life (by 2-3 months of age), and the infections are more severe than those with THI.

Mahdi Terbi

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Research Concepts:

Transient Hypogammaglobulinemia of Infancy




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Question 382: A family of three is involved in a motor vehicle crash wherein the 4-month-old daughter sustains third-degree burns over 20% of her body surface area. Which of the following is true regarding fluid resuscitation for burn injuries in the pediatric population?

Choices:

1. Infants require two-figure fluid calculations to account for the need for dextrose supplementation
2. Children rarely require fluid resuscitation after sustaining burns, due to their lower intravascular volumes
3. Fluid calculations and body surface area calculations are the same as for adults
4. The cutoff for using the adult formula in fluid requirement calculations is generally accepted as 20 kg

Moh'd Terbi

Answer: 1 - Infants require two-figure fluid calculations to account for the need for dextrose supplementation

Explanations:

- Children have lower intravascular volumes than adults and require immediate fluid resuscitation for burn injuries.
- Fluid calculations for pediatric patients in these situations are generally guided by either the Cincinnati formula or the Galveston formula.
- In addition to different volumes, pediatric patients require different fluid compositions.
- Infants especially have lower glycogen stores and, as such, will require dextrose added to maintenance fluids in addition to the estimated fluid resuscitation, creating a two-figure fluid calculation.

Mohud Terbi

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Research Concepts:

Burn Fluid Management




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Question 383: What has been demonstrated to improve the prognosis of children with infantile spasms?

Choices:

1. Early treatment
2. Repeat CT scans every six months
3. Monotherapy with the ketogenic diet
4. High dose ACTH treatment

Moh'd Terbi

Answer: 1 - Early treatment

Explanations:

- Overall, the prognosis of infantile spasms is poor, but better outcomes have been demonstrated in those with short delays between presentation and initiation of treatment as well as the response to ACTH. This reinforces why it is important as clinicians that we are aware of the signs of IS as well as diagnosis strategies and appropriate treatment; time is truly prognosis for IS.
- Improvement in prognosis has not been demonstrated with repeat CT scans. To determine etiologic origins of IS MRI is recommended as it has higher sensitivity than CT. MRI is recommended to be repeated in six months if the initial scan is negative, but this has not demonstrated improvement in the prognosis of a patient with IS.
- In cases that are refractory to initial treatment with ACTH or vigabatrin, clinicians may consider initiation of a ketogenic diet. The ketogenic diet is used as an adjunct to ACTH and vigabatrin and has not shown to be effective as a first-line treatment or as monotherapy. In one study after one month of the ketogenic diet, 35% of patients were seizure free with an additional 30% seizure-free by the third month. Improvement in prognosis occurs due to early initiation of treatment and not the addition of the ketogenic diet.
- High dose ACTH has been theorized to improve prompt cessation of spasms. This has been theorized without definitive evidence. As above prompt initiation of treatment has been showed to improve prognosis with no significant improvement in prognosis with high dose ACTH versus low dose ACTH. ACTH in high dose is known to cause increased side effects so most clinicians will start low dose treatment to decrease the likelihood of adverse effects of medication.

Mona Terry

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Research Concepts:

Infantile Spasms

StatPearls Knowledge Base

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Moh'd Terbi

Question 384: A 13-year-old male presents to the clinic with resolved symptoms of sharp, stabbing, non-radiating, and limited parasternal chest pain that is not related to eating. His examination is normal. A chest x-ray suggests a right aortic arch with a leftward displacement of the trachea. Which of the following is the most accurate statement about the patient's underlying diagnosis?

Choices:

1. A right aortic arch with aberrant left subclavian is the primary cause of these symptoms, and the ligamentum arteriosum should be divided
2. The patient should undergo pulmonary function testing as this anatomy is a common cause of vocal cord dysfunction.
3. The finding of a right aortic arch is incidental and does not need further evaluation "loose" vascular ring does not always cause symptoms.
4. He should be sent for an urgent echocardiogram.

Mem'd Terbi

Answer: 3 - The finding of a right aortic arch is incidental and does not need further evaluation "loose" vascular ring does not always cause symptoms.

Explanations:

- A finding of a right aortic arch on chest x-ray does not mean a vascular ring is present.
- To further delineate the aortic arch anatomy, a CT scan can be performed to delineate the branching pattern of the head and neck vessels.
- A right aortic arch with an aberrant left subclavian is a vascular ring but not always associated with symptoms.
- A "loose" vascular ring does not always cause symptoms. The primary symptoms occur with eating - dysphagia lusoria. Therefore if no feeding difficulties, especially with solid foods, further evaluation for a vascular ring is not necessary. If a right aortic arch is noted on chest x-ray, a swallow study can demonstrate a posterior indentation which would diagnose the presence of a vascular ring. Vocal cord dysfunction is not associated with vascular rings. It is unusual for a vascular ring with a right arch to have respiratory symptoms. His symptoms are benign non-cardiac chest pain, often termed precordial catch syndrome.

Moni Terlu

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Research Concepts:

Right Aortic Arches



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Moh'd Terbi

Question 385: An 18-year-old girl presents to her provider for evaluation of primary amenorrhea. Initially, the patient had presented to her provider about three years ago with concerns of short stature and delayed puberty. She was diagnosed with constitutional delay of puberty. However, even after three years, she did not show any signs of pubertal development and was referred to an endocrinologist. The examination was significant for short stature (4'11"), and absent breast development. Pituitary hormonal profile assessment reveals: Prolactin (0-25 ng/ml) 35, IGF-1 (116-341 ng/ml) 119, Free T4 (0.9-1.7 ng/dl) 0.54, ACTH (7.2-63.3 pg/ml) 19, Cortisol (6.2-19.4 mcg/dl) 12, Luteinizing hormone (1.14-8.75 mIU/ml) 1.39, and Follicle-stimulating hormone (0.95-11.95 mIU/ml) 6.14. Ultrasound of the pelvis shows prepubertal adnexal structures. Magnetic resonance imaging of the pituitary gland shows a 5 cm pituitary tumor compressing the optic chiasma, and involving bilateral cavernous sinuses. What is the next step in the management of this girl?

Moh'd Terlh

Choices:

1. Referral to neurosurgery for surgical removal of the tumor
2. Referral to radiation oncology for radiotherapy
3. Serial dilution of prolactin
4. Start gonadotropin releasing hormone therapy for induction of puberty

Answer: 3 - Serial dilution of prolactin

Explanations:

- Prolactinomas can present in prepubertal female patients as primary amenorrhea. Prolactin disrupts the release of gonadotropin-releasing hormones causing pubertal disturbances.
- Prolactin levels can be falsely low in patients with extremely high prolactin levels due to the "hook effect." Prolactin levels are assessed by a sandwich ELISA where prolactin molecules bound to both the capture and detection antibodies are detected. In instances of extremely high prolactin levels, the number of molecules bound to both the antibodies is minuscule and therefore the prolactin level is falsely low. Dilution of the sample (1:10 or 1:100) decreased the number of prolactin molecules in the sample however increases the probability of the molecules to bind to both capture and detection antibodies, thereby showing a paradoxical rise in the prolactin levels.
- Hook effect should be suspected in cases where the history is suggestive of a prolactinoma, and imaging reveals a big tumor, but the prolactin level is low.
- Assessing for hook effect and diagnosing prolactinomas as they are managed medically unlike other pituitary tumors where the mainstay of treatment is surgery.

Mona Tehrani

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Research Concepts:

Galactorrhea

StatPearls Knowledge Base

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Moh'd Terbi

Question 386: A 4-year-old girl is brought into the emergency department by her parents. They report high spiking fevers that began several days ago. They also report that the patient has complained of headaches and aching joints and that today she developed a rash. On physical examination, the patient's temperature is 103.2 F (39.5 C), her heart rate is 120 beats/min, and her blood pressure is 105/70 mm Hg. There are nonexudative conjunctivitis and an erythematous, dry oropharynx on examination. Pulmonary and cardiac examinations are unremarkable except for tachycardia. Her distal limbs are notable for mild swelling. Skin examination reveals a diffuse, polymorphous rash with some plaques. The morbidity and mortality of this condition are associated with which of the following complications?

Choices:

1. Overwhelming sepsis caused by encapsulated organisms
2. Central hypertension and stroke
3. Glomerulonephritis and renal failure
4. Coronary artery aneurysms and thrombosis

Mohd Tariq

Answer: 4 - Coronary artery aneurysms and thrombosis

Explanations:

- The morbidity and mortality (3%) of Kawasaki disease (KD) are overwhelmingly associated with the development of inflammatory coronary artery aneurysms, most of which are asymptomatic at the time of formation.
- Aneurysms may be detected by echocardiography. Thrombosis can occur in the aneurysms, resulting in direct or embolic coronary artery occlusion.
- Coronary events may occur weeks or even many years after the febrile illness. A baseline echocardiogram should be obtained at the time of the acute illness and should be repeated 2 and 6 weeks later.
- Early recognition of the disease and treatment with intravenous immunoglobulin and aspirin have significantly decreased the frequency of aneurysm formation and thrombotic coronary events. Renal compromise is distinctly unusual in KD.

Mona Terbi

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Research Concepts:

Kawasaki Disease




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Question 387: A 10-year-old female arrives at the emergency department following a motor vehicle collision. Thirty minutes earlier, she was crossing the street when a car drove through the red light and hit the left side of her body. She was awake when paramedics arrived at the scene, but then had a 30-second generalized seizure, followed by several minutes of decreased responsiveness. Her level of consciousness has improved gradually since the seizure occurred. She is maintaining her airway, has clear and equal breath sounds, and her vital signs are normal. She has had no episodes of vomiting. On physical examination, the patient is lying flat with her entire spine immobilized. She is awake, follows commands, and answers questions, although she seems confused. Her Glasgow coma scale score is 14. She has a 2 cm by 5 cm boggy hematoma over her right temple, which is tender to palpation. Her pupils are equally reactive to light and accommodation. She has full strength and normal reflexes in all extremities. The rest of the physical examination is unremarkable. Which of the following is the best next step in the evaluation of this patient?

Med'd Terbi

Choices:

1. Computed tomography of the brain
2. Plain radiography of the skull
3. Complete blood count
4. Urinalysis

Answer: 1 - Computed tomography of the brain

Explanations:

- Due to the patient's altered mental status, a large right temple hematoma, and severe mechanism of injury followed by a seizure, computed tomography (CT) of the brain is the best next step in testing her for potential intracranial injury.
- CT of the brain is a rapid and accurate way to identify intracranial injuries in children after head trauma.
- It is not recommended to perform a brain CT for children at low risk for traumatic brain injury. This includes children with a normal neurologic examination, no loss of consciousness, no vomiting, no severe headache, no evidence of skull fracture, and no high-risk mechanism of injury.
- It is difficult to differentiate the small number of children at high risk for intracranial complications and clinical deterioration after head trauma from the many children at very low risk. Clinical symptoms are neither sensitive nor specific, which is why imaging, such as CT, is necessary to aid in the management of these patients.

Mon's Tech

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Research Concepts:

Waddell Triad




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improvement.

Moh'd Terbi

Question 388: A 17-year-old female patient presents with a complaint of never having menstruated. She is otherwise healthy. Her vitals are notable for a blood pressure of 145/85 mmHg. She is Tanner stage 1. Further workup reveals normal female genitalia, and routine labs show only hypokalemia. Further studies reveal elevated ACTH and 11-deoxycortisone. Cortisol, 17-hydroxyprogesterone, estrogen, and progesterone are low. What is the most likely enzyme deficiency in this patient?

Choices:

1. 21-hydroxylase
2. 17-hydroxylase
3. 3-beta hydroxylase
4. 11-beta hydroxylase

Moh'd Terbi

Answer: 2 - 17-hydroxylase

Explanations:

- 17-hydroxylase deficiency is a rare form of congenital adrenal hyperplasia.
- 17-hydroxylase deficiency is not identified on newborn screens like the more common 21-hydroxylase deficiency and is often not diagnosed until puberty.
- Lack of sexual maturation, hypertension, and hypokalemia are the common presenting features of 17-hydroxylase deficiency.
- 17 hydroxylase deficiency-related delayed maturation should be treated with appropriate hormone replacement to prevent complications.

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Moh'd Terbi

Research Concepts:

C 17 Hydroxylase Deficiency




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Question 389: A 6-month-old male infant is brought to the clinic and is found to have several comedones on his cheeks and upper back. There are no apparent inflammatory papules, pustules, nodules or cysts. No scarring can be appreciated at this time. The remainder of the examination is unremarkable. The parents request treatment. Which of the following would be most appropriate at this time?

Choices:

1. Topical erythromycin
2. Topical benzoyl peroxide gel
3. Curettage
4. Obtain DHEA and testosterone levels

Moh'd Terbi

Answer: 2 - Topical benzoyl peroxide gel

Explanations:

- Infantile acne is different from neonatal acne and is more common in males.
- Testing for circulating androgen levels is not necessary if there are no signs of precocious puberty or virilization on examination.
- Topical benzoyl peroxide is an appropriate treatment for uncomplicated infantile acne that is mild in severity. Topical retinoid preparations, alone or in combination with topical benzoyl peroxide are options as well.
- Curettage is not recommended.

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Moh'd Terbi

Research Concepts:

Infantile Acne




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Question 390: A 17-year-old female presents to the emergency department following a syncopal episode lasting less than 1 minute. There was no tongue biting, incontinence, twitching, or tonic-clonic movements. She denies palpitations or chest pain. Her physical exam is normal. Glucose and ECG are normal. What is the appropriate next step in management?

Choices:

1. CT of the head
2. EEG
3. Encourage the patient to stay hydrated and consume reasonable amounts of salt
4. 24-hour Holter monitor

Moh'd Terbi

Answer: 3 - Encourage the patient to stay hydrated and consume reasonable amounts of salt

Explanations:

- Most episodes of syncope in this age group are vasovagal.
- The differential includes cardiac causes, migraines, seizures, hyperventilation, and hypoglycemia.
- Vasovagal syncope may be a presumptive diagnosis in patients with a classic history and a benign physical exam in the setting of a normal ECG.
- If history, physical, and ECG are normal, the patient should be advised to increase fluid and salt intake.

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Moh'd Terbi

Research Concepts:

Vasovagal Episode




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Question 391: A 3-year-old toddler was brought to the emergency department in moderate to severe respiratory distress. According to the mother, the patient was found in the shed located in the backyard playing with a liquid container. On physical examination, the patient is anxious and diaphoretic with copious secretion from to oral and nasal cavity requiring frequent suctioning. Pupils are about 3 mm bilaterally but reactive to light. While being examined patient passed a significant amount of urine. Lungs have scattered wheezes and some rhonchi, but the patient has good respiratory effort with intermittent coughing. Heart sounds are normal with no murmur. Vital signs are heart rate 73 beats per minute, blood pressure 95/66 mmHg. Respiratory rate is 25 breaths per minutes. After stabilizing the patient which of the following medication is the most appropriate to administer to alleviate the patient's symptoms.

Choices:

Moh'd Terbi

1. Albuterol
2. Atropine
3. Pralidoxime
4. Ketamine

Answer: 2 - Atropine

Explanations:

- To relieve the muscarinic effect of acetylcholine (Ach) in cholinergic crisis secondary to organophosphate poisoning, the drug of choice is atropine.
- The patient has organophosphate poisoning from ingestion of insecticide. Acetylcholine overstimulates the muscarinic and nicotinic receptor in organophosphate poisoning producing the clinical symptomatology. A useful mnemonic is SLUDGEM (S - salivation, L - lacrimation, U - urinary frequency, D - diarrhea, G - gastrointestinal cramping and pain, E - emesis, and M - miosis).
- The best way to relieve the muscarinic symptoms is by administration of atropine.
- Pralidoxime is indicated for muscular weakness associated with nicotinic effect of ACh from organophosphate poisoning. It acts on the nicotinic receptors in organophosphate poisoning.

Mehdi Terbi

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Research Concepts:

Cholinergic Crisis




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Question 392: A newborn infant weighing 2.6 kg is cyanotic with saturation in 80% on room air. A chest x-ray demonstrates a boot-shaped heart, and echocardiogram shows tetralogy of Fallot with severe pulmonary valve stenosis. A patent ductus arteriosus is noted arising off of the underside of the right innominate artery. Which of the following syndromes is most likely to be present in this patient?

Choices:

1. Williams syndrome (7q11.23 deletion)
2. DiGeorge syndrome (22q11 deletion)
3. Turner syndrome (XO)
4. Noonan syndrome (PTPN11)

Moh'd Terbi

Answer: 2 - DiGeorge syndrome (22q11 deletion)

Explanations:

- The infant described has tetralogy of Fallot with a right aortic arch as defined by a right innominate artery.
- The most common genetic syndrome associated with tetralogy of Fallot and a right aortic arch is DiGeorge syndrome.
- DiGeorge syndrome can be diagnosed the majority of times by FISH for the 22q11 deletion.
- Noonan syndrome is most commonly associated with supravalvular pulmonic stenosis. Turner syndrome is associated with left-sided lesions (coarctation of the aorta, bicuspid aortic valve). Williams syndrome is associated with supravalvular pulmonary and aortic stenosis.

Mohd Terbi

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Research Concepts:

Right Aortic Arches




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Question 393: A 3-year-old male is brought in by his mother due to intermittent limping in the morning and after having a nap. He has no past medical history, and his body mass index (BMI) is 28 kg/m2. On examination, there is swelling of the knee joint in both legs. A diagnosis of inflammatory disease is suspected. The mother does not want the patient to undergo sedation. Which of the following is the most appropriate imaging study?

Choices:

1. X-ray
2. Ultrasonography
3. Computed tomography
4. Magnetic resonance imaging

Moh'd Terbi

Answer: 2 - Ultrasonography

Explanations:

- This clinical scenario is describing a young child who has juvenile idiopathic arthritis (JIA).
- Ultrasonography and magnetic resonance imaging (MRI) with gadolinium injection are more accurate than clinical exams and other image modalities for the evaluation of joint inflammation.
- Ultrasonography is most appropriate for this patient since the study does not require sedation.
- MRI with gadolinium injection is the best image study for joint inflammation and bone erosion. However, sedation is necessary for young children. X-ray remains the initial imaging used for symptomatic joints; however, the radiographic changes are undetectable in an early stage of JIA.

Mohd Terbi

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Research Concepts:

Juvenile Idiopathic Arthritis




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Question 394: A 16-year-old female presents to the emergency department with altered mental status. She is difficult to arouse and has slurred speech. On examination, she has track marks on her arms. Her vital signs reveal a heart rate of 98 beats/min, blood pressure 100/60 mmHg, respiratory rate 16/minute, and oxygen saturation 98% on room air. Her urine drug screen is positive for benzodiazepines, cannabinoids, opiates, and alcohol. She is admitted for monitoring and intravenous fluid administration. On day 2 of hospitalization, she complains of nausea, vomiting, diarrhea, and abdominal pain. Her pupils are noted to be equal and dilated. What is the likely cause of her symptoms on day 2?

Choices:

1. Alcohol withdrawal
2. Opioid withdrawal
3. Cannabis withdrawal
4. Benzodiazepine withdrawal

Moh'd Terbi

Answer: 2 - Opioid withdrawal

Explanations:

- This patient initially presented with toxic encephalopathy secondary to multiple illicit drug use. Her physical exam findings on day 2 suggest opiate withdrawal. While opioid intoxication is life-threatening, opioid withdrawal is generally mild and is not life-threatening.
- Opioid withdrawal usually resembles a flu-like illness characterized by yawning, sneezing, rhinorrhea, nausea, diarrhea, vomiting, tearing, and dilated pupils.
- Depending on the half-life of the drug, the withdrawal symptoms may last for three to ten days. Clonidine can be used to help reduce symptoms. In cases of severe withdrawal with uncontrolled symptoms, a tapering dose of a long-acting opiate such as methadone or buprenorphine may be used.
- Alcohol, benzodiazepine or barbiturate withdrawal can be severe and life-threatening. It usually presents with autonomic symptoms of tachycardia, hypertension, diaphoresis, and tremors. In severe cases, the patient may have seizures as well.

Mohsen Tehrani

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Research Concepts:

Withdrawal Syndromes




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improvement.

Moh'd Terbi

Question 395: A mother whose daughter was recently diagnosed with loose anagen hair syndrome comes in for a follow-up appointment. She is concerned about the prognosis and comorbid conditions. Which of the following would be the most appropriate response?

Choices:

1. Loose anagen hair syndrome usually is related to underlying malnutrition and treatment of this will result in resolution
2. Hair loss from loose anagen hair syndrome usually improves with age but the scarring from alopecia may be permanent
3. Loose anagen hair syndrome usually is associated with other autoimmune conditions
4. Loose anagen hair syndrome usually is isolated, benign, and self-limited

Moh'd Terbi

Answer: 4 - Loose anagen hair syndrome usually is isolated, benign, and self-limited

Explanations:

- Loose anagen hair syndrome is a disease where hairs usually firmly adherent in anagen phase are unable to anchor; therefore, they are easily shed. This disease usually is isolated and only rarely associated with an underlying disease.
- Loose anagen hair syndrome is inherited in an autosomal fashion. Unlike alopecia areata, it is not an autoimmune condition. The disease results from a defect in keratinization and anchoring of anagen hairs.
- Loose anagen hair syndrome is a non-scarring alopecia. Even after hairs are dislodged, prompt regrowth is a distinguishing feature.
- During a physical exam, a pull test will be positive. It is performed by using gentle traction on hair shafts. Telogen hairs normally represent 10% of scalp hairs and thus removal of four to six hairs is a normal finding in the hair pull test. Grossly more than this, with anagen hairs being pulled, is characteristic of this disease.

Mona Terbi

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Research Concepts:

Loose Anagen Syndrome




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improvement.

Moh'd Terbi

Question 396: A 17-year-old college female freshman with a history of tinea versicolor and asthma who is overweight presents with 6 months of flaky, dry skin between her toes of the right foot. On physical exam, she has a BMI of 28, and she appears to have a malar rash. Her clothes have the odor of cigarettes. She is wearing open-toe shoes, and there is maceration and scaling of the second, third, and fourth interdigital spaces on the right foot. She states that a dermatologist scraped some skin from the area about two months ago onto a microscope slide and gave her oxiconazole which did help, but it never completely resolved. What would be the next step in diagnosing her condition?

Choices:

1. Perform a Wood's lamp exam
2. Perform microscopy with KOH prep
3. Send a sample of the skin for culture
4. Perform a dermatoscope exam

Walid Terbi

Answer: 1 - Perform a Wood's lamp exam

Explanations:

- The Wood's lamp exam would show coral-red fluorescence due to the production of coproporphyrin III from Corynebacterium minutissimum, the causative agent of erythrasma. It is noninvasive and is the first step.
- Microscopy with KOH prep may show concomitant dermatophyte infection, which sometimes occurs with interdigital erythrasma.
- A culture would grow small shiny, whitish-grey colonies that have coral-red fluorescence. However, Wood's lamp can be done in the clinic and allows for more prompt diagnosis and treatment.
- The dermatoscope is used for diagnosing melanomas and other skin cancers and tumors. It can be used to diagnose tinea capitis. It would be less helpful in the diagnosis of erythrasma, which is caused by bacteria.

Mon'd Terbi

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Research Concepts:

Erythrasma




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Question 397: A 17-year-old male with no significant past medical history presents with complaints of nausea, vomiting, and diarrhea. The symptoms began abruptly about 6 hours prior to presentation. He has had three bouts of vomiting and three bouts of non-bloody diarrhea. The patient denies fevers. He denies abdominal pain. He has not traveled recently. His vital signs are temperature 37.2 C, heart rate 84 BPM, respiratory rate 12/minutes, blood pressure 118/72 mmHg, and oxygen saturation 100% on room air. Clinically, he demonstrates moist mucous membranes and normal skin turgor. His abdomen is soft and non-tender. What is the most appropriate next step?

Choices:

1. Antiemetic medications and oral rehydration
2. Check a CBC and chemistry panel
3. Computed Tomography of the abdomen
4. Obtain stool studies and prescribe antibiotics

Wahib Terbi

Answer: 1 - Antiemetic medications and oral rehydration

Explanations:

- The best treatment for a patient who does not demonstrate any signs of significant dehydration is to treat symptomatically with antiemetics and ensure the patient can tolerate oral rehydration.
- The patient in the scenario does not have any physical exam findings of severe dehydration.
- Viral gastroenteritis is a clinical diagnosis and does not require blood work or radiographic studies for diagnosis.
- The patient does not display any "red flag" symptoms and his presentation is consistent with simple viral gastroenteritis.

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Moh'd Terbi

Research Concepts:

Viral Gastroenteritis




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Question 398: A 15-year-old girl presents to the clinic with chief complaints of a diffuse rash all over the body and pain in multiple joints. On further examination, she reports having painful fingers when exposed to cold water. Moreover, the color of her fingertips also alters in winters. Lab results show the presence of elevated rheumatoid factor, erythrocyte sedimentation rate, as well as anti-dsDNA antibodies. Which of the following is the best initial long-term therapy for this patient?

Choices:

1. Methotrexate
2. Hydroxychloroquine
3. Prednisone
4. Naproxen

Moh'd Terbi

Answer: 2 - Hydroxychloroquine

Explanations:

- Hydroxychloroquine is preferred initially for undifferentiated connective tissue disease (UCTD).
- It decreases inflammation by decreasing the migration and chemotaxis of neutrophils and other inflammatory cells.
- Nonsteroidal anti-inflammatory drugs (NSAIDs) are used for pain control. They are not used for long-term management. Hydroxychloroquine decreases inflammation. Hence it is used as the first-line drug.
- If symptoms evolve later on to a particular disease like rheumatoid arthritis, then methotrexate can be prescribed. Initially, corticosteroids can also be used to control the symptoms. For long-term management, anti-inflammatory drugs are preferred.

Moh'd Terbi

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Research Concepts:

Undifferentiated Connective Tissue Disease




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Question 399: A full-term newborn patient is noted to have noisy breathing. Suctioning of the oropharynx yields copious amounts of secretions that continue to accumulate. An attempt to feed the infant results in choking. An anterior-posterior chest radiograph demonstrates the catheter curled in the upper esophageal pouch, along with the presence of air in the stomach and bowel. Which of the following is pertinent to involved pathophysiology?

Choices:

1. Diverticular outpouching of the trachea from the midgut
2. Abnormal duplication of the caudal foregut during the fourth and fifth weeks of embryonic development
3. Abnormal posterior positioning of the tracheoesophageal septum
4. The esophagus failed to recanalize during week 8 of embryonic development

Moh'd Terbi

Answer: 3 - Abnormal posterior positioning of the tracheoesophageal septum

Explanations:

- The infant most likely has a tracheoesophageal fistula (TEF) and esophageal atresia. TEF occurs due to abnormal septation of the caudal foregut during the fourth and fifth weeks of embryonic development.
- Under normal conditions, the trachea forms as a diverticulum of the foregut and develops a complete septum that separates it from the esophagus.
- Fistula formation in conjunction with esophageal atresia (EA) occurs during an abnormal posterior positioning of the tracheoesophageal septum, resulting in a retained connection between the trachea and esophagus.
- Isolated EA without TEF commonly occurs when the esophagus fails to recanalize during week 8 of embryonic development.

Mohit Terdal

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Research Concepts:

Tracheoesophageal Fistula




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Question 400: A newborn baby is being evaluated in the newborn nursery immediately post-birth. The baby appears well with APGAR scores 9 and 9 at one and five minutes respectively. On cardiac auscultation, there is a grade II/VI holo-systolic murmur heard best in the left lower sternal border. It is later found on echocardiogram that the baby has a large ventricular septal defect. In what direction will the blood flow through this aberrant opening initially?

Choices:

1. Right ventricle to left ventricle
2. Left ventricle to right ventricle
3. Right atria to right ventricle
4. Right atria to left atria

Moh'd Terbi

Answer: 2 - Left ventricle to right ventricle

Explanations:

- A ventricular-septal defect (VSD) can occur in children and is one of the more common congenital defects. They are typically louder when smaller. This question could be solved purely on knowledge of the cardiac cycle.
- The greater pressures in the left ventricle would force the blood from the left ventricle to the right ventricle at least initially. This creates a shunt away from the systemic circulation toward the pulmonary circulation. For this reason, infants could be asymptomatic initially.
- An atrial septal defect is the most common congenital cardiac defect in children but typically presents with a split S2.
- The blood flow in these defects can reverse in a phenomenon known as Eisenmenger syndrome. This is where the blood flow reverses due to hypertrophy of the right ventricle in response to the increased preload from the defect.

Mani's Terbi

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Research Concepts:

Ventricular Septal Defect




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Section 5

Question 401: A 17-year-old white male with a past medical history of depression presents to the emergency department after being found on the kitchen floor by his mother. He reports no loss of consciousness, but the mom reported that her son was slurring his words and appeared somnolent and diaphoretic. Head CT without contrast was unremarkable, and pertinent labs show glucose of 45 mg/dL. A urine toxicology screen is negative. A C-peptide is elevated at 3.8 ng/mL. The patient is administered intravenous dextrose and monitored with noted improvement. He later admits that he was feeling suicidal and decided to overdose on his father's medications. His father suffers from hypertension, diabetes mellitus, coronary artery disease, and hypertriglyceridemia. Which of the following is the likely agent responsible for the patient's hypoglycemia?

Mohd Terbi

Choices:

1. Metformin
2. Acarbose
3. Glipizide
4. Subcutaneous insulin

Answer: 3 - Glipizide

Explanations:

- Glipizide is a second-generation sulfonylurea that is used in the management of diabetes mellitus type 2. The mechanism of action of sulfonylureas is to induce pancreatic secretion of endogenous insulin.
- As sulfonylureas induce the pancreatic secretion of endogenous insulin, their therapy is associated with an expected increase in serum C-peptide levels since endogenous (not exogenous) insulin is correlated with C-peptide levels. Exogenous sources of insulin are not associated with an increase in C-peptide.
- One of the most prominent adverse effects of sulfonylureas is hypoglycemia since its mechanism of action promotes pancreatic beta cell secretion of insulin. Diabetic medications such as the biguanide metformin do not cause hypoglycemia.
- C-peptide is a useful marker to distinguish between exogenous and endogenous sources of insulin. C-peptide will be expected to be elevated with sulfonylurea therapy but within the normal range or will be low in patients with diminished pancreatic secretion of insulin.

Mehrdad Tehrani

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Research Concepts:

Hypoglycemia



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Moh'd Terbi

Question 402: A 3-year-old previously healthy boy is brought to the emergency department after a shaking episode. The mother states that she witnessed the entire event. She went to tuck the child in when she noticed that his entire body was shaking and she could not get him to stop. The episode lasted about 3 minutes and following that the patient was sweaty, irritable and hard to arouse. The mother called emergency medical services who stated that he had a temperature of 103.4 F and gave him rectal acetaminophen. By the time they got to the hospital, the boy was back to neurologic baseline. He does not remember the event and mom deny any recent trauma or stressors in the family. What is the likely diagnosis?

Choices:

1. Night terrors
2. Nightmares
3. Simple febrile seizure
4. Complex febrile seizure

Moh'd Terbi

Answer: 3 - Simple febrile seizure

Explanations:

- This patient had a simple febrile seizure. He had a generalized tonic-clonic episode that lasts less than ten minutes and associated with a fever. He was postictal following the episode but returned back to baseline. This is a common pediatric diagnosis that is often seen in children ages 6 months to 6 years of age.
- There is no need for lab work or imagining and as long as the patient back to baseline and there is a source of the illness, they can be discharged home with primary care follow-up.
- If the patient had two or more of these episodes within a 24-hour period, had a focal shaking spell, or the episode lasted longer than 10 minutes then this would be considered a complex febrile seizure. This diagnosis does require more management with either follow up with neurology or EEG.
- Night terrors are a parasomnia that is often seen in the first third of the night. Episodes can be dramatic with screaming and thrashing lasting for 10 to 20 minutes. For the majority of patients, they cannot be awakened and will not be able to recall any part of the episode. They often return back to sleep. Nightmares are often triggered by something frightful or stressful while the patient is awake causing an episode during sleep that causes more stress, fear, and terror. Patients can often recall these episodes.

Mehri Tehrani

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Research Concepts:

Febrile Seizure

StatPearls Knowledge Base

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Moh'd Terbi

Question 403: A 4-year-old boy who is previously healthy presents to the emergency department with an episode where he sat up in bed, screamed, was inconsolable, and went back to sleep. The patient has been napping inconsistently for the past few days and has been having trouble sleeping. In the ED, he is back to normal, smiling, and playing with the stethoscope. He has stable vital signs with a normal physical exam. What should be done next?

Choices:

1. Reassurance
2. Complete blood count and an EKG
3. Outpatient consultation to neurology
4. Emergent consultation to neurology

Moh'd Terbi

Answer: 1 - Reassurance

Explanations:

- This is a night terror. These are self-limiting with a good prognosis.
- No medications are needed since these are self-limiting.
- The patient often does not recall the episode.
- It is not associated with seizures or epilepsy.

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Research Concepts:

Night Terrors

Moh'd Terbi




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Question 404: A 17-year-old female presents with a “popping sensation” in her chest that she has had for a long time, but she noticed became worse after a slide tackle in soccer yesterday. She states it doesn't really hurt. On exam, she can reproduce it by abducting her arm over 90 degrees. You appreciate a clicking sensation with palpation of the sternoclavicular joint, but no deformity. What management is indicated?

Choices:

1. Emergent orthopedic surgical consult
2. Obtain x-rays, if normal, discharge for outpatient follow up
3. CT of the chest
4. Do nothing, advise her to quit playing soccer

Moh'd Terbi

Answer: 2 - Obtain x-rays, if normal, discharge for outpatient follow up

Explanations:

- The patient in this question stem is describing a history of multidirectional instability. Most frequently, this is associated with shoulder pain from overuse, but may also be related to genetic disorders such as Ehlers-Danlos or Marfan syndrome. Patient's may have ligamentous laxity at any joint, including the sternoclavicular joint. She likely sprained it during her slide tackle yesterday.
- It is standard practice to obtain x-rays in the emergency department. These are likely to be normal but will help rule out any more nefarious pathology.
- This patient does not necessarily need to see an orthopedic surgeon or sports medicine physician immediately. She can consult with her primary care provider and be referred to a specialist if she does not improve.
- Management includes physical therapy, possibly use of a sling temporarily, analgesia and a graded return to sports. Therapy is generally directed at strengthening the muscles of the anterior chest and neck to stabilize the joint as much as possible.

Michael Terlizzi

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Research Concepts:

Sternoclavicular Joint Injury



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Moh'd Terbi

Question 405: A 35-year-old white female with a history of gestational diabetes delivers a 9 lb (4 kg) baby boy via non-emergent c-section. Due to initially uncontrolled gestational hyperglycemia, she was placed on subcutaneous insulin throughout her pregnancy with questionable compliance. A heel stick reveals neonatal blood glucose of 39 mg/dL. What is the likely underlying cause of the low sugar levels?

Choices:

1. Maternal overdose of prescribed insulin therapy
2. Increased neonatal pancreatic beta-cell secretion of insulin
3. Allergic reaction to maternal insulin
4. The neonate's macrosomia leads to increased glucose demands

Moh'd Terbi

Answer: 2 - Increased neonatal pancreatic beta-cell secretion of insulin

Explanations:

- Neonatal hypoglycemia is a complication of uncontrolled gestational diabetes due to increased neonatal pancreatic beta-cell secretion of insulin.
- Due to the presence of human placental lactogen, pregnant women are at increased risk for impaired glucose tolerance. Although insulin does not cross the placenta, maternal hyperglycemia does transfer to the fetus. The elevated blood sugars trigger increased insulin production from fetal pancreatic beta cells. Once the baby is delivered, the insulin already created by the fetus does not have the continued elevated blood sugars from the mother. The resultant insulin-glucose mismatch causes hypoglycemia.
- Maternal insulin does not cross the placenta. Pregnant women with impaired glucose tolerance or overt gestational diabetes as diagnosed with an oral glucose tolerance test should be started on insulin. Maternal insulin therapy does not cause fetal or neonatal hypoglycemia.
- Although there is no placental transfer of insulin, exposure to maternal hyperglycemia provides a stimulus for fetal pancreatic beta cells to secrete insulin as an appropriate response. Upon delivery, there is a withdrawal of maternal hyperglycemia although the neonatal pancreatic beta cells will continue to produce insulin. The subsequent glucose-insulin mismatch results in hypoglycemia.

Moh'a Terbi

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Research Concepts:

Hypoglycemia

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Moh'd Terbi

Question 406: A 17-year-old male came to the emergency department with abdominal pain, seizures, and episodes of vomiting. Morphine and diazepam were given. Urine showed increased porphobilinogen. No more seizures episodes were reported. Abdominal pain is decreasing with the therapy. Which is the next step in the treatment of this condition?

Choices:

1. Stop morphine and reassure
2. Give intravenous heme
3. Change diazepam to valproic acid
4. Prepare for a liver transplant

Moh'd Terbi

Answer: 2 - Give intravenous heme

Explanations:

- Acute intermittent porphyria is a condition caused by the deficiency of the enzyme porphobilinogen deaminase. It presents with nausea and vomiting, abdominal pain, changes in bowel habits, seizures, etc. Labs will reveal an increase in urinary porphobilinogen. Treatment for eliminating acute attacks is IV heme. It replaces liver body storage so the production of d-aminolevulinic acid is stopped.
- Giving heme replaces the heme pool in the liver, stopping the induction of delta-aminolevulinic acid synthase.
- Heme dose is 3 to 4 mg per kilogram of body weight infusion for 30-40 minutes once a day for 4 days. The response usually appears on the third day with a decrease of urine and serum porphobilinogen.
- Morphine for pain control should be given until pain resolves. Valproic acid is one of the drugs known to precipitate attacks and should be avoided. The definitive treatment is an orthotopic liver transplant. It is the last option and is given to patients with IV heme refractory disease.

Moh'd Terwi

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Research Concepts:

Acute Intermittent Porphyria



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Moh'd Terbi

Question 407: A 16-year-old male with cystic fibrosis presents to the clinic for a follow-up visit. He takes enzyme supplementation with meals, and he has been using chest physiotherapy twice daily. Genetic testing reveals homozygous G551D mutation of cystic fibrosis transmembrane regulator (CFTR) protein. He is started on ivacaftor to improve his CFTR protein function. Which of the following is most helpful in monitoring the effectiveness of the medication?

Choices:

1. Venous blood gas
2. Biannual chest radiograph
3. Sweat chloride level
4. Complete blood count with differential

Moh'd Terbi

Answer: 3 - Sweat chloride level

Explanations:

- Elevated sweat chloride content is diagnostic for cystic fibrosis. Sweat chloride content is a surrogate for CFTR function.
- Chloride quantification is the most sensitive and specific way to measure CFTR function.
- Sweat chloride may be measured in patients receiving CFTR-modulating therapies such as ivacaftor.
- While other modalities are being researched for the diagnosis of CF, such as sweat conductance, analysis of sweat chloride levels remains the gold standard.

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Moh'd Terbi

Research Concepts:

Sweat Testing




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Question 408: A child is born with a raisin-appearing abdominal wall, cryptorchidism, and bilateral hydroureteronephrosis. Which of the following best identifies the most appropriate surgery and the most appropriate time to perform it?

Choices:

1. Ventral hernia repair around 6 months of age
2. Abdominal wall reconstruction around 2 years of age
3. Urinary tract reconstruction around 2 years of age
4. Orchiopexy around 6 months of age

Moh'd Terbi

Answer: 4 - Orchiopexy around 6 months of age

Explanations:

- Prune belly syndrome is a rare, congenital disorder largely characterized by the clinical triad of deficient abdominal musculature, cryptorchidism, and urinary tract abnormalities. Three types of surgeries may be required by patients with prune belly syndrome: orchiopexy, urinary tract reconstruction, and abdominal wall reconstruction.
- Orchiopexy is almost always indicated in patients, urinary tract reconstruction is controversial, but really only indicated in patients with recurrent febrile urinary tract infections or demonstration of progressive renal deterioration, and abdominal wall reconstruction is indicated in children with moderate to severe abdominal wall deficiencies.
- The current recommendation for bilateral orchiopexy is at about 6 months of age. Elective orchiopexy any sooner brings with it higher anesthetic risk, and elective orchiopexy any later makes it less likely the adequate mobilization can be achieved for single-stage scrotal placement and worsens the testicular prognosis as in any other case of undescended testes.
- Abdominoplasty may be performed at any time, but is usually performed in coordination with any other indicated surgeries, including orchiopexy, vesicostomy or urinary tract reconstruction.

Mohini Parikh

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Research Concepts:

Prune Belly Syndrome

StatPearls Knowledge Base

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Moh'd Terbi

Question 409: A 6-months old neonate was previously well until two days ago started presenting purulent otorrhea and irritability. An immunological profile showed deficient IgG concentrations and normal IgA and IgM serum levels. Which one of the following microorganisms is more likely to cause this illness?

Choices:

1. Streptococcus pneumoniae
2. Pseudomonas aeruginosa
3. Staphylococcus aureus
4. Salmonella enteritidis

Moh'd Terbi

Answer: 1 - Streptococcus pneumoniae

Explanations:

- The clinical picture of this pediatric patient suggests an acute otitis media (AOM), which is characterized by purulent otorrhea and irritability in neonates.
- Besides, this patient presents an antibody deficiency, which is more likely to be transient hypogammaglobulinemia of infancy. It typically characterizes by very low IgG by the age of 5-6 months and variable concentrations of other immunoglobulins. This problem is corrected by the age of 1-2 years when the child's immune system starts producing its immunoglobulins.
- The most likely microorganism causing AOM is Streptococcus pneumoniae, which is a genus of coccus, Gram-positive and chained bacteria.
- Streptococcus pneumoniae can cause other infections, including pneumonia and meningitis. Antibiotics should be early started to treat and limit this infectious disease.

Mehdi Terbi

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Research Concepts:

Transient Hypogammaglobulinemia of Infancy




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Question 410: A 16-year-old female is brought to the emergency department after being found on the streets. A friend states that the patient had attended a party where stimulant drugs and alcohol were being used. The patient is behaving wildly and complains of hearing voices. She is confused, delirious, and appears paranoid. Her vital signs: temperature is 38 C, BP 128/87 mmHg, RR 18/min, and HR 98 bpm. Which of the following is the best drug to treat this patient?

Choices:

1. Labetalol
2. Naloxone
3. Haloperidol
4. Lorazepam

Moh'd Terbi

Answer: 4 - Lorazepam

Explanations:

- Amphetamine-related psychiatric disorders include a psychotic state where the individual will present with confusion, delirium, paranoia, and hallucinations.
- Generally, acutely agitated psychotic patients are treated with intravenous benzodiazepines (lorazepam, diazepam, or midazolam) as first-line agents. However, if a second-line agent is needed, antipsychotic medicines like risperidone, haloperidol, ziprasidone, and olanzapine have been successful in managing amphetamine-associated psychosis.
- Agitation can be treated with benzodiazepines such as lorazepam. Beta-blockers, such as labetalol, can be used to treat elevated blood pressure and pulse and are also important in the long-term treatment of amphetamines-associated cardiomyopathy (e.g., carvedilol).
- Antidepressants such as fluoxetine would not be indicated for these symptoms. Opioid overdose is unlikely given her acute psychiatric symptoms. Most cases of amphetamine-induced psychosis are self-limiting. There is a chance the patient may have ingested kratom, and naloxone would be appropriate.

Mohit Tekchandani

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Research Concepts:

Amphetamine Related Psychiatric Disorders



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Moh'd Terbi

Question 411: A 6-years old boy is brought in for care with symptoms of marked nasal blockage. His mother states that he sustained a nasal injury with a badminton shuttle on the previous day. External nasal examination showed no obvious signs of injury. Anterior rhinoscopy showed a bilateral cherry red swelling arising from the nasal septum. This swelling was fluctuant on palpation and did not regress in size with a nasal decongestant spray. Which of the following statement is true?

Choices:

1. This is likely to be infected
2. This is not a case of nasal septal hematoma since there was no obvious sign of external nasal injury
3. Immediate surgical intervention is required in such cases
4. Children develop nasal septal hematoma only after a major injury

Alloh'd Terbi

Answer: 3 - Immediate surgical intervention is required in such cases

Explanations:

- A nasal septal hematoma usually occurs within 24 to 72 hours of nasal trauma. Atraumatic causes are extremely rare.
- Signs of external nasal injury might not be obvious and symptoms can be non-specific, therefore a high index of suspicion for a septal hematoma is needed in all the cases of nasal injury.
- Immediate surgical intervention is required in all the cases of nasal septal hematoma to prevent serious infective complications and permanent sequelae.
- In children, the septal cartilage is softer and gets buckled easily, thus predisposing to hematoma formation even with minor trauma.

Moh'd Terbi

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Research Concepts:

Nasal Septal Hematoma




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Question 412: A 17-year-old male patient presents to the healthcare provider with a right frontal-temporal headache for the last ten hours. He states that this is like his usual headache and is associated with photophobia. He describes the headache as "pounding," and that light aggravates the headache. He states that naproxen usually helps, but that this time it did not. What medication should be chosen to treat this condition?

Choices:

1. Ibuprofen
2. Sumatriptan
3. Dihydroergotamine
4. Acetaminophen

Moh'd Terbi

Answer: 2 - Sumatriptan

Explanations:

- This patient is having a migraine headache that is refractory to nonsteroidal anti-inflammatory drugs (NSAIDs).
- With moderate to severe migraines such as the one in this presentation, analgesics such as NSAIDs may not provide adequate relief.
- Of the following choices, sumatriptan has been shown in some studies to be more effective for severe headaches than NSAIDs, dihydroergotamine, and acetaminophen.
- Prochlorperazine is an antiemetic that can be used when a headache is associated with nausea and vomiting. However, it has been largely replaced by the use of metoclopramide as the former may have more extrapyramidal side effects.

Mohd Terbi

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Research Concepts:

Migraine Medications




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Question 413: A 7-month-old infant is brought in by EMS with a history of cessation of breathing while being fed. When they arrived at the scene, the mother was in tears that her child turned blue with no breathing and became very limp for about 45 seconds after which he took a big gasp and became pink again and began to cry. EMS report that no immediate resuscitation was done. During transport, EMS noted another episode where the infant became limp and apneic for 30 seconds and resumed respirations spontaneously. On arrival at the emergency department, the infant appears pink and is crying vigorously. Vitals reveal a pulse of 130/min, respiratory rate 34/min, temperature 99.1 F, and oxygen saturation is 98% on room air. Physical exam reveals an active child in no distress and normal physical findings. Which of the following would most likely preclude him from being categorized as 'low-risk BRUE'?

Choices:

Mohsen Terbi

1. First episode duration of 45 seconds
2. No resuscitation by paramedics
3. Child turning blue
4. Two episodes of apnea

Answer: 4 - Two episodes of apnea

Explanations:

- Low-risk infants were those that are: age older than 60 days, gestational age 32 weeks or older, postconceptional age greater than or equal to 45 weeks, first brief resolved unexplained event (no previous brief resolved unexplained event ever and not occurring in clusters), and event lasting less than one minute. Additionally, no CPR required by the trained medical provider and no concerning historical features or physical examination findings also indicate low-risk infants.
- This infant had two episodes within a short interval that categorizes him to 'high-risk BRUE.'
- The American Academy of Pediatrics does not offer any guidance for infants with high-risk brief resolved unexplained event; the common sense approach is to perform relevant tests based on specific areas of concern identified in the history or physical exam.
- History and physical exam are essential to categorize the event as brief resolved unexplained event or to assign an alternate diagnosis.

Mona Terbi

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Research Concepts:

Brief Resolved Unexplained Event



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Question 414: A 5-year-old boy is brought to the clinic due to concerns of early sexual development. Three months ago, the mother first noticed pubic hair along with the enlargement of the penis. She reports that the pubic hair continued to increase along with the development of body odor. A review of the growth charts reveals accelerated linear growth. On examination of his genitalia, pubic hair is at SMR 3, and the phallus is of the adult size. Testes are palpated bilaterally measuring about 9 ml. GnRH agonist stimulation test confirms precocious puberty. What is the next appropriate test in this patient?

Choices:

1. Ultrasonography of the scrotum
2. Magnetic resonance imaging of the brain
3. CT scan of the abdomen
4. DHEA-S levels

Moh'd Terbi

Answer: 2 - Magnetic resonance imaging of the brain

Explanations:

- The boy in this vignette is experiencing precocious puberty evidenced by increased testicular volume (pre-pubertal volume is 4 ml), accelerated growth velocity along with secondary sexual characteristics (pubic hair and body odor). GnRH agonist testing is the gold standard for confirming central precocious puberty.
- After establishing the diagnosis, it is important to identify the etiology. While the causes of central precocious puberty (CPP) in girls are idiopathic, boys usually have a pathology which includes brain lesions, infections, trauma, and genetic mutations.
- So the next best step in this boy would be to rule out a brain lesion by performing a magnetic resonance imaging of the brain.
- Ultrasonography of the scrotum would be beneficial in peripheral precocious puberty when suspecting for testicular tumors. CT scan of the abdomen would be useful to identify hCG secreting tumors or adrenal tumors. DHEA-S levels are helpful in differentiating central causes from peripheral causes.

Menia Tariq

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Research Concepts:

Precocious Puberty




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Question 415: A 16-year-old female presents to her primary care provider out of concern for never having a menstrual period. She has cyclical pain, breast development, pubic and axillary hair, and no evidence of virilization. Which of the following is the best next step in her evaluation?

Choices:

1. Speculum exam
2. Serum follicle-stimulating hormone and luteinizing hormone
3. Serum prolactin
4. Ultrasound of the abdomen and pelvis

Moh'd Terbi

Answer: 1 - Speculum exam

Explanations:

- The most likely cause of her primary amenorrhea is uterine or outflow tract obstruction. Primary amenorrhea is the absence of menses by 16 years of age if normal growth and secondary sexual characteristics are present or by 14 years of age if menses has not occurred and there is a lack of evidence of puberty.
- A speculum exam will rule out imperforate hymen, transverse vaginal septum, or cervical stenosis.
- Primary amenorrhea may be caused by pregnancy, which must always be ruled out.
- Other causes of primary amenorrhea include tumors, systemic illness, congenital abnormalities of the uterus, and isolated deficiencies of sex hormones.

Moh'd Terbi

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Research Concepts:

Primary Amenorrhea




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Question 416: A full-term infant who was diagnosed prenatally with truncus arteriosus is born, and truncus arteriosus is confirmed with post-natal echocardiography. No dysmorphic features are notable on physical exam. The infant's heart rate is 120 beats/min, blood pressure 85/55 mmHg, respiratory rate 45 breaths/min, and oxygen saturation 85% on room air. Which of the following is the most appropriate next step in the management of this patient?

Choices:

1. Provide 100% oxygen via a nasal cannula
2. Genetics consult and genetic testing with chromosome microarray
3. Start oral furosemide
4. CT of the head

Moh'd Terbi

Answer: 2 - Genetics consult and genetic testing with chromosome microarray

Explanations:

- 22q11 microdeletions have been detected in 25% to 50% of patients with conotruncal abnormalities. Not all patients with 22q11 microdeletions present with dysmorphic features.
- All children born with a conotruncal cardiac defect should undergo genetic testing.
- In patients with truncus arteriosus, providing supplemental oxygen should be avoided, as it may worsen congestive heart failure due to pulmonary over-circulation. Furosemide should be considered if the patient shows signs of congestive heart failure and to improve left and right ventricular failure.
- CT of the head usually is not required as part of the workup for DiGeorge syndrome.

Moh'd Terbi

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Research Concepts:

Truncus Arteriosus




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Question 417: A 9-year male child was brought in by his mother because of difficulty in learning, especially math, writing, and telling right from left. He does not pay attention in the classes at the school, does not get out of his chair frequently, and likes playing with his peers. The child suffered from brain asphyxia during the perinatal period, but the mother did not notice any abnormalities until school age. Which of the following should be excluded as a cause of the learning disabilities in this child?

Choices:

1. Autism spectrum disorder
2. Attention deficit hyperactivity disorder
3. Depression
4. Developmental Gerstmann syndrome

Moh'd Terbi

Answer: 4 - Developmental Gerstmann syndrome

Explanations:

- This patient likes playing with his peers, so autism spectrum disorder is unlikely to cause this problem. Also, not all children with autism suffer from learning disabilities.
- Attention deficit hyperactivity disorder can cause learning disabilities in children, but this patient is hypoactive as he does not get out of his chair frequently.
- No clue in the current and past medical history suggests depression in this child.
- Developmental Gerstmann syndrome should be considered in children with normal appearance with learning disabilities, especially those who suffered from asphyxia during the perinatal period. Further examination will show damaged areas in the brain.

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Research Concepts:

Gerstmann Syndrome




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Question 418: A male presents with complaints of hair loss and a skin rash. He reveals that he had unprotected sexual intercourse with a prostitute several months ago. During the exam, you note that he has reddish-brown papular lesions on his penis. In the anal area, you also note several large elevated plaques that are gray and tender to touch. What condition is associated with these lesions?

Choices:

1. Primary syphilis
2. Secondary syphilis
3. Tertiary syphilis
4. Quaternary syphilis

Moh'd Terbi

Answer: 2 - Secondary syphilis

Explanations:

- Secondary syphilis can have a varied presentation, but it usually includes a diffuse or localized macular-papular rash and non-tender generalized lymphadenopathy.
- One may also see the presence of reddish-brown papular lesions in the genital region.
- Elevated plaques in the anal region signify condylomata lata lesions that may be tender.
- Condylomata lata lesions are very infectious and often confused with condyloma acuminatum (venereal warts), which are painless.

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Moh'd Terbi

Research Concepts:

Syphilis




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Question 419: A 3-year female is being evaluated by a team of providers in the pediatric intensive care unit. She was previously diagnosed with Herpes simplex virus encephalitis one month ago and was readmitted due to abnormal movements and recurrence of seizures. Cerebrospinal fluid studies revealed the presence of positive anti-NMDAR antibodies. Which of the following is least likely to be helpful in treating the patient's condition as the first line of treatment?

Choices:

1. Methylprednisolone
2. Intravenous immunoglobulin
3. Plasmapheresis
4. Cyclophosphamide

Moh'd Terbi

Answer: 4 - Cyclophosphamide

Explanations:

- As the first-line methylprednisolone (20-30 mg/kg/day, up to 1 gram daily for 3-5 days) with intravenous immunoglobulin can be considered in mild to moderate cases.
- Intravenous immunoglobulins (2 g/kg divided over 2-5 days), can be used along with methylprednisolone at high dose can be used as the first-line in mild to moderate cases.
- Plasmapheresis can be used as the the-first line of treatment in severe cases.
- Rituximab, with or without cyclophosphamide, can be used as second-line therapy, when first-line treatment failed.

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Moh'd Terbi

Research Concepts:

Anti-NMDA Receptor Encephalitis In Children




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Question 420: A 17-year-old intravenous drug user presents to the hospital with low-grade fever, lethargy, and general malaise. He has tender, red, raised lesions on his palms and soles, which he reports appeared a few days ago. Cardiac auscultation reveals a pansystolic murmur in the tricuspid area. Lab investigations reveal a white blood cell count of 19000/microlitre. What is the most likely diagnosis for the lesions described?

Choices:

1. Heberden nodes
2. Bouchard nodes
3. Osler nodes
4. Janeway lesions

Moh'd Terbi

Answer: 3 - Osler nodes

Explanations:

- Osler's nodes are usually associated with infective endocarditis. They are typically painful nodules found on the distal fingertips and toes but can also be found on the palms and soles.
- Other features of endocarditis include splinter hemorrhages, Roth spots, and Janeway lesions.
- Janeway lesions can also occur on the palms in infective endocarditis but are not painful.
- Heberden and Bouchard nodes are associated with osteoarthritis and are not related to infective endocarditis.

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Moh'd Terbi

Research Concepts:

Osler Node and Janeway Lesions




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Question 421: A 17-year-old male is referred to an endocrinologist for evaluation of delayed puberty. The patient gives a history of an impaired sense of smell since childhood. His vital signs are normal. Physical examination reveals sparse facial, pubic, and axillary hair, rounded body contour, and under-developed genitalia. A hormonal assay shows low luteinizing hormone (LH), follicle-stimulating hormone (FSH), and testosterone levels but normal thyroid hormone levels. What is the most likely diagnosis?

Choices:

1. Constitutional delay in puberty
2. Kallmann syndrome
3. Hyperprolactinemia
4. Klinefelter syndrome

Moh'd Terbi

Answer: 2 - Kallmann syndrome

Explanations:

- Kallmann syndrome is due to a defect in the migration of gonadotropin-releasing hormone (GnRH)-producing neurons leading to a lack of GnRH.
- No GnRH results in a decrease in luteinizing hormone (LH), follicle-stimulating hormone (FSH), testosterone, and sperm count.
- As a cause of hypogonadotropic hypogonadism, Kallmann syndrome can be differentiated from other causes because patients present with defects in their sense of smell (hyposmia or anosmia).
- Patients with Kallmann syndrome may not realize their inability to detect odors, and this may not be discovered unless proper testing is done.

Moh'd Terbi

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Research Concepts:

Kallmann Syndrome




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Question 422: A 15-year-old otherwise healthy female presents with her mother for evaluation of abdominal pain. She describes her pain as occurring daily for the past year, though she recalls it being less severe over the summer. She describes the pain as crampy, located in the left upper and lower abdomen, and present throughout the day. She occasionally has increased pain with eating. She finds no association with any particular foods. She occasionally finds a bowel movement relieves the pain temporarily, but it soon returns. She has a bowel movement daily and describes her stool as pebble-like. She has a recollection of snake-like stool in the past before she had symptoms. Her weight and height have remained at the sixtieth percentile for age. On examination, her vital signs are within normal limits. Her left lower quadrant has a mobile mass present. Which of the following additional features would be most suggestive of a diagnosis of irritable bowel syndrome?

Moh'd Terbi

Choices:

1. Pain resolves with treatment of constipation
2. Pain persists despite treatment of constipation
3. Presence of blood in her stool
4. Elevated C-reactive protein

Answer: 2 - Pain persists despite treatment of constipation

Explanations:

- Functional abdominal pain in children is classified by the Rome IV criteria. Subtypes include irritable bowel syndrome, functional dyspepsia, and abdominal migraine. Rome III criteria were different in several areas. In Rome III, diagnosis of IBS required chronic abdominal pain or discomfort for at least three days per month. Rome IV removed the term discomfort, and the frequency of abdominal pain increased to at least one day per week. It also states the abdominal pain is associated with defecation or a change in bowel habits.
- Irritable bowel syndrome requires abdominal pain in relation to defecation or the characteristics of stool. Patients with a primary complaint of constipation may present similarly to those with functional constipation. A key defining feature is whether the pain resolves with the treatment of constipation. Diagnosis of irritable bowel syndrome specifically requires that pain persists despite treatment of constipation.
- Diagnosis of functional abdominal pain requires consideration of alternate causes of pain with adequate workup. It, however, is not a diagnosis of exclusion.
- Features such as the presence of blood in the stool or signs of an inflammatory process should prompt a further workup to evaluate for the presence of an organic cause of disease, such as inflammatory bowel disease (Crohn disease, ulcerative colitis), neoplastic processes, or other considerations depending on the age of the patient, risk factors present, and other characteristics specific to each presentation.

Mehdi Terbi

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Research Concepts:

Functional Abdominal Pain In Children




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Moh'd Terbi

Question 423: A full-term male infant is born with no maternal risk factors. The newborn has an abnormal hooded penile foreskin, with an abnormal curvature of the glans of the penis and a slight ventral displacement of the urethra, still visible in the glans of the penis. The infant has a normal urinary stream, with both testes descended and well-differentiated male genitalia. What should be the next step in the evaluation of the newborn?

Choices:

1. Renal and bladder ultrasound
2. Voiding cystourethrogram
3. Surgery evaluation
4. Refer the newborn for surgical evaluation after the discharge from the hospital

Moh'd Terbi

Answer: 4 - Refer the newborn for surgical evaluation after the discharge from the hospital

Explanations:

- Distal hypospadias, when found as an isolated malformation, do not warrant further labs or evaluation.
- Newborns diagnosed with distal hypospadias do not require immediate surgical evaluation. These newborns can be referred for outpatient evaluation after discharge.
- If a patient was found with proximal hypospadias and undescended testes, the patient should have a karyotype and endocrine workup for intersex conditions.
- Surgery in infants diagnosed with hypospadias should be done between 6 to 18 months of life to avoid psychological stress, and behavioral problems noticed in older infants who undergo the procedure.

Moh'd Terbi

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Research Concepts:

Hypospadias




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Question 424: A lumbar puncture performed on a neonate born at 34 weeks confirmed bacterial growth in cerebrospinal fluid (CSF) despite normal white count in the fluid. In addition to antibiotics, which of the following should also be performed?

Choices:

1. Repeat lumbar puncture in 24 to 36 hours
2. Change antibiotics if symptoms appear to worsen
3. Discontinue antibiotics given the normal white count
4. Repeat lumbar puncture and CSF culture to confirm diagnosis to prevent unnecessary long-term antibiotic therapy

Moh'd Terbi

Answer: 1 - Repeat lumbar puncture in 24 to 36 hours

Explanations:

- Infants with bacterial meningitis should have a repeat lumbar puncture performed 24 to 36 hours after initiation of antibiotic therapy to ensure adequate pathogen coverage.
- If pathogens are identified in the repeat culture, a change in dosage or type of antibiotics is required.
- Bacterial meningitis requires a longer treatment duration than other causes of neonatal sepsis.
- Recommended duration of treatment is two weeks for gram-positive organisms and three weeks for gram-negative organisms, after sterilization of the CSF. Further antibiotic therapy may be necessary if meningitis is complicated by seizures, abscess or is resistant to antimicrobial therapy.

Mohd Terbi

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Research Concepts:

Neonatal Sepsis




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Question 425: A 2-year-old male with sickle cell anemia presents to the emergency department with pallor and fatigue for the past 24 hours. Vital signs are notable for a heart rate of 160 bpm. The child is afebrile. Physical exam demonstrates a fullness in the left upper quadrant. Labs show a hemoglobin level of 4.4g/dL. Which laboratory study would be most helpful for confirming the suspected diagnosis?

Choices:

1. Reticulocyte count
2. White blood cell count
3. Blood culture
4. Serum IgM level

Moh'd Terbi

Answer: 1 - Reticulocyte count

Explanations:

- Splenic sequestration crises present with acute onset anemia, pallor, and splenomegaly. The reticulocyte count should be increased in a child with a splenic sequestration crisis.
- Aplastic anemia can present similarly to a sequestration crisis but will be associated with a decreased reticulocyte count.
- Children 5 years old are at the most risk of having a splenic sequestration crisis.
- Serum IgM levels may be decreased in children who undergo a splenectomy to prevent future episodes of splenic sequestration.

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Moh'd Terbi

Research Concepts:

Splenic Sequestration Crisis




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Question 426: A 14-month-old child was started on amoxicillin for otitis media. Eight hours later, the patient returned to the clinic as they became toxic, irritable, and febrile with a temperature of 39.3 C. The child is lethargic and is not interactive with parents or the medical staff. Physical exam reveals skin lesions of variable size, non-blanching, and appear hemorrhagic. The tympanic membranes are immobile and injected. There is resistance to neck flexion, and the child displays photophobia. However, there was no focal deficit. What is the best next step in the management of this patient?

Choices:

1. Initiation of oral prednisone
2. Transfer to the emergency department for a lumbar puncture
3. Obtain a brain CT to rule out a focal lesion
4. Administer ceftriaxone intravenously at meningitic doses

Moh'd Terbi

Answer: 4 - Administer ceftriaxone intravenously at meningitic doses

Explanations:

- Treatment should be initiated immediately if there is a high suspicion of meningococcal infection due to the rapid progression of the disease. Lumbar puncture and blood cultures should be obtained only if they do not delay treatment. In this case, the child is toxic appearing, febrile, with resistance to neck flexion, and has a rash concerning for meningococcemia, and treatment should be initiated immediately.
- The deteriorating clinical status should be cause for concern. Death can occur within hours of fulminating Neisseria meningitis. In addition, disseminated intravascular coagulation, vasculitis, pericarditis, and septic shock may develop. Inotropic medications or vasopressors may be required as the shock state progresses.
- Survival is optimized with prompt, intensive, aggressive medical care. The patient must be isolated. Report the infection to the local and state health departments as dictated by institutional policy.
- Simply changing the antibiotic is not adequate. The treatment of choice for meningococcal infection is third-generation cephalosporins, such as ceftriaxone or cefotaxime. CT brain is not the next step here as it is unlikely to change the course of treatment.

Mon'd Tarh

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Research Concepts:

Neisseria Meningitidis

StatPearls Knowledge Base

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Moh'd Terbi

Question 427: A 4-year-old girl is brought to your office by her mother. She reports that she has never had to get her daughter's hair cut. Also, it is difficult to style, and when she tries, hair comes out easily. You examine the scalp, which reveals diffuse thinning of the hair at different lengths and no evidence of scarring. What is the most likely diagnosis?

Choices:

1. Lichen planopilaris
2. Loose anagen hair syndrome
3. Uncombable hair syndrome
4. Alopecia areata

Moh'd Terbi

Answer: 2 - Loose anagen hair syndrome

Explanations:

- Hair loss can be divided into scarring and non-scarring alopecias. Loose anagen hair syndrome is a non-scarring alopecia characterized by hair easily and painlessly removed from the scalp.
- Loose anagen hair syndrome most commonly is seen in children with light colored hair and has an average onset at 3 years of age.
- Loose anagen hair syndrome is characterized by painless hair loss and normal regrowth after hair loss. This leads to the appearance of ragged hair with individual hairs being of different lengths.
- Loose anagen hair syndrome may be inherited in an autosomal dominant fashion with incomplete penetrance.

Mohd Terbi

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Research Concepts:

Loose Anagen Syndrome




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Question 428: A 3-month-old female infant, with no particular pathological history, was hospitalized for a large hemangioma of the face which has been evolving since birth. On examination, she had a large hemangioma of the left hemiface extending to the ear, neck and upper eyelid. Cardiac auscultation reveals a systolic murmur at the aortic focus and the femoral pulses were weak. Which of the following complications is most likely present in this patient?

Choices:

1. Double aortic arch
2. Coarctation of the aorta
3. Aneurysm of the aorta
4. Airway hemangioma

Moh'd Terbi

Answer: 2 - Coarctation of the aorta

Explanations:

- Coarctation of the aorta is the most common (14.5 %) cardiovascular complication. It should be suspected in this case because of the presence of systolic murmur at the aortic focus and difficulty in breathing.
- Diagnosis is suggested by clinical examination and confirmed by chest X-ray, ECG, and echocardiography.
- PHACE syndrome should be suspected in the presence of cervicofacial infantile hemangioma over 5 cm in size and a systemic evaluation is required. An echocardiogram should be performed looking for heart and aortic abnormalities.
- The treatment, in this case, is based on propranolol for the hemangioma and surgical management of her cardiac abnormalities.

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Research Concepts:

PHACE Syndrome




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Question 429: A 5-month-old infant is brought in by the mother with the chief complaint that the infant stopped breathing and had to be vigorously tapped on his back before resuming his breathing. The episode lasted approximately 2 minutes, and she noted that his lips turned blue during the episode. She denies any seizure-like activity, and the child was well when she left to work earlier in the day. The mother works in a daycare center, and the infant is cared for by her boyfriend along with her two other children aged 2 and 4 years. In the emergency department, the child appears somewhat limp and is less active. The mother reports that she was abusing opiates during her pregnancy but otherwise was unremarkable. The infant was born at full term with no perinatal complications. Vital signs show a pulse of 98/min, respiratory rate 34/min, temperature 99.2 F, and oxygen saturation is 98% on room air. His physical examination is remarkable for decreased tone with normal reflexes but otherwise normal. What is the best initial step in the management of this patient?

Moh'd Terbi

Choices:

1. CT of the head
2. EEG
3. Echocardiogram
4. Urine drug screen

Answer: 1 - CT of the head

Explanations:

- Infants presenting with a period of apnea accompanied by cyanosis raise the suspicion of BRUE (Brief Unresolved Event). However, this presentation would have to be categorized as high-risk BRUE due to the episode lasting more than a minute, and the event is not completely resolved.
- The persistent limpness and reduced activity suggest some compromise in the neurological function. In an otherwise well-appearing infant with sudden onset, neurological dysfunction raises the suspicion of non-accidental trauma, specifically shaken baby syndrome. While retinal hemorrhages can strongly suggest this diagnosis, A CT scan can confirm intracranial hemorrhages that would be diagnostic.
- If the pattern of presentation does not fit into low-risk BRUE (age less than 60 days, gestational age greater than 32 weeks, first event, episode longer than 60 seconds and no concerning clinical findings), an alternative diagnosis should be considered. A history of accidental trauma, the occurrence of a seizure, or the presence of fever should be sought. Thorough examination to identify neurological or cardiac abnormalities and determination of serum glucose and electrolytes can help identify a metabolic condition. A 12-lead EKG may be helpful to detect cardiac arrhythmias.
- Echocardiography may be helpful if cardiac abnormalities are found on an exam or EKG, but otherwise would not be indicated. EEG is helpful if the history was suspicious for a seizure episode. Even though the mother abused drugs during pregnancy, it would be unlikely to result in a positive drug test 5 months later. Therefore urine drug screen is not indicated.

Moni Terk

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desired).

Research Concepts:

Brief Resolved Unexplained Event




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Moh'd Terbi

Question 430: A 3-year-old girl is brought to the clinic for evaluation of a white skin lesion and white hairs on her scalp. Her mother reports that the lesion was present at birth, but she received no antenatal care. Physical examination reveals a triangular-shaped white forelock and a well-demarcated hypopigmented plaque of skin in the center of her forehead. Ophthalmic and neurologic examinations are normal. Histopathologic examination is most likely to show which of the following?

Choices:

1. Absent melanocytes
2. Decreased melanocytes
3. Normal melanocyte density with decreased epidermal melanin
4. Increased phenylalanine levels

Moh'd Terbi

Answer: 1 - Absent melanocytes

Explanations:

- Piebaldism is an autosomal dominant disorder of melanocyte migration and development characterized by isolated congenital leukoderma (white skin) and poliosis (white hair) in a distinct ventral midline pattern. Histopathologic examination of affected tissue will reveal the absence of melanocytes within the epidermis and hair follicles.
- The most common cause of piebaldism is a mutation in the KIT proto-oncogene.
- The most common finding is a white forelock in a triangular shape, which is present in up to 90% of cases of piebaldism (poliosis circumscripta).
- If the diagnosis of piebaldism is suspected, a careful examination should be performed to exclude overlapping syndromes with extra-cutaneous manifestations, such as Waardenburg syndrome.

Wahid Terbi

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Research Concepts:

Piebaldism




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Question 431: A 15-year-old male presents to the clinician with his mother for a follow-up appointment. The patient had initially presented with a rash on his cheeks and upper arms one year ago. The rash consisted of flesh-colored papules with follicular involvement, and he was diagnosed with a chronic condition. Since that time, he has tried several treatments, including emollients, exfoliants, and anti-inflammatory medications with no improvement. He reports he is distressed about his appearance and would like to know if there are any other treatment options. Which of the following is another possible treatment modality?

Choices:

1. Prednisone
2. Laser therapy
3. Cryotherapy
4. Methotrexate

Moh'd Terbi

Answer: 2 - Laser therapy

Explanations:

- The patient has keratosis pilaris, which is a harmless skin condition that causes rough, dry patches, and small bumps on the upper arms, cheeks, thighs, or buttocks. They can be treated with topical keratolytic such as urea cream 20% or salicylic acid 6%.
- Emollients, topical anti-inflammatories, vitamin D3 derivatives, and retinoids can also be used for the treatment of keratosis pilaris.
- Phototherapy and laser treatments are also available treatment options that can be used after conservative therapy fails.
- The condition generally improves over time and may not even require treatment.

Mohd Terbi

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Research Concepts:

Keratosis Pilaris




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Question 432: A child presents with persistent high fever, red eyes, red lips, diffuse rash over the torso, and peeling of the hands and feet. The child is admitted, treated with high dose intravenous immunoglobulin (IVIG) and aspirin and an echocardiogram is ordered. Which of the following scenarios represents the lowest risk of coronary artery aneurysm?

Choices:

1. A 6-year-old white girl presents with elevated WBC, C-reactive protein (CRP) and thrombocytosis is treated within 6 days of onset and has complete resolution of fever and symptoms with IVIG
2. A 9-month-old boy with 9 days of fever, elevated CRP, and thrombocytopenia
3. A 4-year-old girl presenting with elevated CRP, pro-BNP, has resolution of rash, eye and lip redness with IVIG, but then has recurrence of fever four days later requiring a second dose of IVIG
4. A 4-year-old Japanese boy presenting after 11 days of fever, with only 3 classic KD criteria but elevated CRP with low serum albumin and hemoglobin

Mehdi Terbi

Answer: 1 - A 6-year-old white girl presents with elevated WBC, C-reactive protein (CRP) and thrombocytosis is treated within 6 days of onset and has complete resolution of fever and symptoms with IVIG

Explanations:

- Kawasaki disease can lead to coronary artery aneurysms (CAA). Although treatment with high dose IVIG and aspirin decreases the incidence of aneurysms, several factors portend poor prognosis.
- Of clinical variables, fever beyond eight days is the greatest risk factor for CAA. Risk for CAA is also higher with recurrence of fever after being afebrile for 48 hours and those with incomplete KD on presentation. Incomplete KD requires 5 days of fever, 2 or 3 classic criteria, elevated CRP or ESR along with 3 of the following criteria: white blood count greater than 15,000/microliters, anemia, albumin less than 3 g/dL, elevated alanine aminotransferase (ALT), platelets greater than 450,000/microliter, or sterile pyuria with greater than 10 WBC/HPF.
- Patients who are diagnosed with Kawasaki disease at less than one-year-old are at an increased risk for CAA. Risk of CAA is 3-times higher in boys than girls for giant aneurysms. Asian, Pacific Islander, and Hispanic ethnicity are also risk factors for CAA.
- Thrombocytosis is a common initial lab abnormality in children with Kawasaki disease. Thrombocytopenia at initial presentation is associated with a higher risk of developing CAA. Other lab abnormalities increasing risk include elevated pro-BNP, TNF-alpha and lower IgG levels.

Monir Terbi

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Research Concepts:

Kawasaki Disease

StatPearls Knowledge Base

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Moh'd Terbi

Question 433: An infant with a known diagnosis of tufted angioma of the leg presents with a rapidly expanding, tense, painful lesion. Kasabach-Merritt phenomenon is established on the basis of physical exam findings and severe thrombocytopenia. Which of the following is the next best step in management?

Choices:

1. Corticosteroids and vincristine
2. Sirolimus
3. Surgical resection
4. Embolization

Moh'd Terbi

Answer: 1 - Corticosteroids and vincristine

Explanations:

- Treatment of Kasabach-Merritt phenomenon consists of supportive therapy of hematologic derangements and treatment of the underlying tumor.
- Surgical resection is the definitive management of kaposiform hemangioendothelioma and tufted angioma. However, it is challenging to achieve clear surgical margins given ill-defined tumor margins and invasion of local structures. It also represents a risk of bleeding. For these reasons, medical therapy is frequently favored.
- Multiple medical therapies have been studied for Kasabach Merritt phenomenon and kaposiform hemangioendothelioma/tufted angioma. Based on consensus guidelines published in 2013, corticosteroids and vincristine are favored as first-line therapy. mTOR inhibitors such as sirolimus may be used as second-line agents if tumor regression is not achieved.
- For kaposiform hemangioendotheliomas and tufted angiomas with a single major feeding vessel, embolization may be considered as therapy. However, embolization carries risk of necrosis to local structures and may not be effective if tumors have multiple feeding vessels.

Mohamed Terbi

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Research Concepts:

Kasabach Merritt Syndrome

StatPearls Knowledge Base

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Moh'd Terbi

Question 434: A baby boy born 24 hours earlier develops a fever of 38.9 C (102 F) and tachycardia. His mother states that he has become increasingly fussy the past several hours and appears jaundiced. A sepsis workup is performed, but blood cultures are negative at 48 hours. What should be done?

Choices:

1. Antibiotics should be discontinued since blood cultures are negative. Continuing antibiotics increases the risk of antibiotic resistance.
2. Continue antibiotics as the patient appears clinically septic, and blood cultures can be negative in sepsis.
3. Discontinue antibiotics only if the mother was group B Streptococcus (GBS) negative.
4. Continue antibiotics only if the neonate has several other risk factors for sepsis such as preterm or very low birth weight.

Mon'd Terbi

Answer: 2 - Continue antibiotics as the patient appears clinically septic, and blood cultures can be negative in sepsis.

Explanations:

- Patients with negative blood and/or cerebrospinal fluid cultures who appear clinically septic should be treated for sepsis.
- Blood cultures can be falsely negative, especially if the mother had received antibiotics during delivery.
- Numerous studies have shown increased mortality rates when neonates are not treated with antibiotics despite clinically appearing septic.
- Empiric antibiotic coverage should be initiated and then de-escalated as symptoms improve and as repeat workup comes up negative.

Mohd Terbi

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Research Concepts:

Neonatal Sepsis




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Question 435: A 2-year-old presents to the emergency department with a barking cough, inspiratory stridor, and sternal wall retractions at rest. She appears minimally agitated. Racemic epinephrine is administered via a nebulizer. For how long is it appropriate to monitor this child for possible rebound of stridor?

Choices:

1. At least 1 hour
2. At least 3 hours
3. At least 6 hours
4. At least 8 hours

Moh'd Terbi

Answer: 2 - At least 3 hours

Explanations:

- This patient has moderately severe croup. Nebulized epinephrine is associated with a reduction in croup symptoms 30 minutes following administration.
- If epinephrine is given for croup, monitor for at least 3 hours for rebound of the condition.
- Five milliliters of L-adrenaline 1:1000 is considered as safe as the racemic form.
- Epinephrine also is used to treat anaphylaxis, asthma, bradycardia, cardiac arrest and shock, toxins, and overdoses.

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Moh'd Terbi

Research Concepts:

Epinephrine




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Question 436: A 2-month-old female infant is brought in by her grandmother due to increased crying, vomiting, and decreased oral intake. As per her grandmother, the patient was in her usual state of health 2 days prior when she last saw her. Vital signs are stable, and the patient is afebrile. On physical examination, the infant is irritable with a high pitched cry. The anterior fontanelle is bulging. The rest of the physical has symmetric chest expansion, clear breath sounds, and no adventitious sounds. The abdomen is soft and non-tender. The skin is clear with no rashes or lesions. Labs and imaging are performed. The chest x-ray shows lucencies in the posterior ribs. What is the diagnosis?

Choices:

1. Meningitis
2. Inflicted traumatic brain injury
3. Pneumonia
4. Acute bronchiolitis

Moh'd Terbi

Answer: 2 - Inflicted traumatic brain injury

Explanations:

- The findings of an irritability high-pitched cry and bulging fontanelle are suggestive of inflicted traumatic brain injury, also known as abusive head trauma, non-accidental head trauma, or shaken-baby-syndrome.
- The lucencies of the posterior ribs are suggestive of posterior rib fractures. Posterior rib fractures are suggestive of child abuse.
- The inflicted traumatic brain injury occurs due to the rapid acceleration-deceleration caused by shaking and direct impact to the head causing tearing of the bridging veins.
- Inflicted traumatic brain injury can be manifested with nonspecific symptoms such as fussiness, altered mental status, and vomiting. Head CT scan is the next diagnostic study.

Mohud Terbi

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Research Concepts:

Pediatric Abusive Head Trauma




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Question 437: A 4-year-old male presents to the emergency department after 5 days of fever. His parents are also concerned about his eyes appearing red, as well as his hands and feet that are peeling. Upon further examination, there is a bright red tongue and cervical lymphadenopathy. The patient receives intravenous immunoglobulin at 2 mg/kg and is started on high-dose aspirin, but the patient fails to improve and remains febrile 48 hours later. Which of the following drugs may be used for refractory therapy for this child's conditions?

Choices:

1. Clopidogrel at a dose of 1 mg/kg per day
2. Oral simvastatin 10 mg per day for 10 days
3. A second dose of Intravenous immunoglobulin at 1 mg/kg
4. Prednisolone 2 mg/kg divided twice daily for 5 days

Moh'd Terbi

Answer: 4 - Prednisolone 2 mg/kg divided twice daily for 5 days

Explanations:

- This patient has refractory Kawasaki disease and needs additional therapy.
- Intravenous immunoglobulin is the standard of care treatment for Kawasaki disease and should be started as soon as possible once the clinical diagnosis is made. The dose is 2 mg/kg and could be delivered in a second course.
- Prednisolone can be added to this therapy as a treatment option. The most common dose is 2 mg/kg divided twice daily for 5 days, followed by a taper.
- Although statins show promise due to their immunomodulating abilities to prevent endothelial dysfunction, there is currently not enough evidence to use them as an adjunct therapy. Corticosteroids have been shown to be of benefit to patients with Kawasaki disease, especially those who have demonstrated IVIG resistance.

Monir Terbi

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Research Concepts:

Kawasaki Disease




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Question 438: A 12-month-old male infant is brought in by the mother to the clinic for his well-child care visit. He has a history of recurrent otitis media and was recently hospitalized for pneumonia. Workup during his hospital stay initially revealed markedly low peripheral blood B-lymphocyte, and further testing showed low serum IgG levels. His growth parameters are normal for his age, and his physical exam is unremarkable. Which of the following vaccine can be safely given to this patient?

Choices:

1. Rotavirus
2. MMR
3. Oral polio vaccine
4. Inactivated polio vaccine

Moh'd Terbi

Answer: 4 - Inactivated polio vaccine

Explanations:

- Inactivated polio vaccine can be safely given to patients with agammaglobulinemia. It is an inactivated vaccine.
- Inactive polio vaccine is administered intramuscular and is a safe alternative to the oral polio vaccine (live vaccine).
- Diphtheria, tetanus, and acellular pertussis vaccine is not a contraindication in patients with agammaglobulinemia. Although they are unlikely to mount an immune response to it, its protein-based components, diphtheria, and tetanus can be used as a diagnostic tool to demonstrate the lack of antibody response in these patients.
- Live virus vaccines are contraindicated in these patients and their families because they may cause vaccine-related infections. Measles, mumps, and rubella vaccine, varicella, rotavirus, and the nasal spray version of the influenza vaccine are live virus vaccines.

Mona Terbi

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Research Concepts:

Agammaglobulinemia




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Question 439: A patient presents with complaints of headaches, muscle aches, dizziness, and unsteady gait that began about six hours ago. His vital signs are pulse 40 bpm, blood pressure 130/80 mmHg, respiratory rate 15/minute, pulse oximetry 99% on room air, and temperature 98.4 F. During his history, he reports he dined at a seafood restaurant last night. On physical exam, you notice pronounced dilation of his pupils, and when you place your stethoscope on his chest, he winces and pulls away claiming that the stethoscope felt hot. Which shellfish toxin might cause these symptoms?

Choices:

1. Saxitoxin
2. Okadaic acid
3. Domoic acid
4. Brevetoxins

Moh'd Terbi

Answer: 4 - Brevetoxins

Explanations:

- Saxitoxin causes paralytic shellfish poisoning, characterized by flaccid paralysis and respiratory failure.
- Okadaic acid causes diarrhetic shellfish poisoning. Symptoms include nausea, vomiting, abdominal pain, and of course diarrhea. These symptoms may also occur in other types of shellfish poisonings.
- Domoic acid causes amnesic shellfish poisoning. Symptoms include coma, seizures, memory loss, hemodynamic instability, and cardiac dysrhythmias.
- Brevetoxins cause neurotoxic shellfish poisoning, which is characterized by paresthesia, vertigo, ataxia, myalgias, headache, mydriasis, bradycardia, and reversal of hot/cold sensation that develop 15 minutes to 18 hours after exposure.

Mon'd Terbi

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Research Concepts:

Shellfish Toxicity




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Question 440: A 10-year-old male has sickle cell disease type SS for which he takes hydroxyurea and folic acid daily. He presents to the emergency department with complaints of a dog bite to his right lower extremity. His father states that the family just got a new puppy that they were playing with in the backyard. While playing the puppy nipped at the child's leg and caused a series of superficial abrasions. The father states that his son had some bleeding which was controlled with direct pressure at the time. He waited several hours before bringing his son to be seen. Currently, the child has no complaints. There are several scabbed abrasions to his right lower extremity on the exam without any signs or symptoms of infection or uncontrolled bleeding. What is the best management for this patient?

Choices:

1. Amoxicillin-clavulanate therapy
2. Debridement and healing by secondary intention
3. Rabies prophylaxis
4. Clean and bandage the wounds

Mon'd Terbi

Answer: 1 - Amoxicillin-clavulanate therapy

Explanations:

- This patient is functionally asplenic and even minor dog bites in asplenic and immunocompromised individuals require antibiotic prophylaxis for Capnocytophaga.
- The wounds are minor and already scabbed. Debridement is unnecessary.
- The dog is a family pet and therefore unlikely to be a carrier of rabies. If there was any concern, the dog should be quarantined and observed.
- The wounds could use cleaning and bandaging, but it is more important to provide prophylaxis against a potentially deadly sepsis.

Mohd Terbi

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Research Concepts:

Animal Bites




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Question 441: A mother who did not receive prenatal care presents to the hospital in labor. When the infant is born you note that a sac containing tissue and cerebrospinal fluid is protruding from the lumbosacral region. Which of the following steps should not be done during the initial evaluation and management of the infant?

Choices:

1. Cover the defect with sterile saline-soaked dressing
2. The infant should be placed supine
3. Use non-latex gloves to examine the defect
4. Consult neurosurgery for prompt evaluation and management

Moh'd Terbi

Answer: 2 - The infant should be placed supine

Explanations:

- Immediately after birth, the lesion should be evaluated to note its size, location, and presence of a cerebrospinal fluid leak.
- Non-latex gloves must be used to avoid latex sensitization.
- The infant should be placed in, lateral or prone position to avoid pressure on the lesion
- The lesion should be covered with a sterile saline-soaked dressing, and larger lesions should be covered with a plastic wrap to prevent heat loss. Neurosurgery should evaluate the infant promptly and consider early surgical correction to decrease the risk of infection.

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Moh'd Terbi

Research Concepts:

Meningomyelocele




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Question 442: A 9-month-old boy is brought to the office for a health supervision visit. He has a history of frequent spitting and vomiting after feeds with fussiness. He has been having episodes of abnormal movements of his neck and back with feeds, otherwise normal. His physician has tried the nonpharmacologic and pharmacologic treatment for these symptoms, without resolution of his symptoms. He continues to be fussy, and his weight percentiles have decreased by five percentiles from his last visit one month ago. Which of the following should be the next step in the management of this patient?

Choices:

1. MRI of the brain
2. EEG
3. Referral to a gastroenterologist
4. Electromyography

Moh'd Terbi

Answer: 3 - Referral to a gastroenterologist

Explanations:

- Sandifer syndrome is characterized by muscle dystonia of the back and neck and can be associated with GERD.
- GERD is caused by the abnormal passage of gastric content from the stomach to the esophagus, which is going to decrease pH in the esophagus and can cause erosion of the esophageal mucosa.
- GERD causes the infant to be fussy, and they can have decreased feeding secondary to it with weight loss.
- Patients with Sandifer Syndrome secondary to GER; if the symptoms are refractory to both nonpharmacologic and pharmacologic treatment, a GI referral is pertinent for further workup of GERD.

Mohud Terbi

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Research Concepts:

Sandifer Syndrome




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Question 443: A 17-year-old female with no significant past medical history presents with complaints of fever, joint pain, headache, and a fine rash on her legs for the last three days. Vitals show a temp of 101 F, blood pressure of 106/60 mm Hg, heart rate of 90 bpm, respiratory rate of 16/minute, and pulse oximetry of 93%. The physical examination reveals a maculopapular rash on the abdomen and both legs. Upon further questioning, the patient reports recently returning from a trip to India. Lab work is significant for leukopenia and thrombocytopenia. What is the most likely diagnosis?

Choices:

1. Dengue fever
2. COVID 19
3. Ebola virus infection
4. Zika virus infection

Moh'd Terbi

Answer: 1 - Dengue fever

Explanations:

- Dengue fever is caused by dengue viruses (DENV), a member of Flaviviruses and is transmitted by Aedes species of mosquitoes.
- The clinical features include ocular/retro-orbital pain, fever, arthralgia and in many cases, petechiae caused by thrombocytopenia.
- The laboratory diagnosis of dengue fever is based on serology (detection of IgM antibodies) or RT- PCR (Reverse transcriptase-polymerase chain reaction).
- The treatment is primarily supportive and involves managing complications like shock and profound thrombocytopenia. NSAIDs should be avoided.

Mohd Terbi

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Research Concepts:

Viral Arthritis




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Question 444: Parents bring their 17-year-old son for evaluation due to his strange behavior at times during the past few weeks. The boy is normally polite and soft-spoken, but he has recently become irritable, impatient, and rude. His parents initially dismissed his behavior as a “phase” with the expectation that he would grow out of it. However, they became very concerned about discovering that he had stolen money from their wallets and was staying up until 4 a.m. When questioned by his father, the boy responded: “I have to be careful because I’m being followed by FBI agents.” The boy has no medical problem. Blood pressure is 164/98 mmHg, pulse 124 bpm, and respiration rate 18/minute. On physical exam, the patient appears irritated, sweating profusely and his pupils are dilated. He is observed for several hours, his condition improves, and discharge to the care of his parents. Which of the following is the most likely diagnosis in this patient?

Moh'd Terbi

Choices:

1. Acute manic episodes with psychotic features
2. Amphetamine intoxication
3. Anticholinergic poisoning
4. Schizophreniform disorder

Answer: 2 - Amphetamine intoxication

Explanations:

- Amphetamine intoxication can present with psychiatric symptoms, including irritability, agitation, and psychosis.
- Common physical signs include tachycardia, hypertension, hyperthermia, diaphoresis, and mydriasis.
- Other complications from amphetamine toxicity include cardiac arrhythmia, seizure, hyperthermia, and intracerebral hemorrhage.
- The diagnosis of amphetamine intoxication is clinical, but a positive toxicology screen can be supported. However, pseudoephedrine and the antidepressant bupropion and selegiline can cause false positive for amphetamines on urine toxicology testing.

Mohd Terbi

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Research Concepts:

Dextroamphetamine-Amphetamine




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Question 445: You see a patient in the office with syndromic facies including malar and mandibular hypoplasia, downward slanting palpebral fissures, coloboma of the lower eyelids, and cleft palate. This patient is seeing you to be evaluated for his hearing loss. The syndrome this patient has is due to a mutation in which gene?

Choices:

1. COL2A on chromosome 7q
2. EYA1 gene on chromosome 8q
3. TCOF1 gene on chromosome 5q
4. PDS gene on chromosome 7q

Moh'd Terbi

Answer: 3 - TCOF1 gene on chromosome 5q

Explanations:

- Treacher Collins syndrome (mandibulofacial dysostosis) results in facial malformations consisting of malar hypoplasia, downward slanting palpebral fissures, coloboma of the lower eyelids, mandibular hypoplasia, malformations of the external ear or canal, dental malocclusion, and cleft palate.
- Ossicular malformations are common.
- These patients may have conductive or sensorineural hearing loss.
- These patients may also have vestibular dysfunction.

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Moh'd Terbi

Research Concepts:

Syndromic Sensorineural Hearing Loss




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Question 446: A 15-month-old child presents with his mother for a 3-week history of limping, favoring his right leg. He fell while running 3 weeks ago and developed a fever of 102F. Since then, he has had progressive pain with ambulation. He is previously healthy and fully immunized. His physical examination is remarkable for a temperature of 102F, and he is refusing to ambulate. He cries in pain with passive range of motion of his right leg at his hip. He also prefers to keep the extremity in an abducted, flexed position at the hip. Besides a CBC, erythrocyte sedimentation rate (ESR), C-reactive protein, and blood culture, you obtain imaging. Which imaging modality is most appropriate at this time?

Choices:

1. Plain films of the hips, including a frog-leg view, the femur, and right tibia-fibula
2. An ultrasound of the right hip
3. Plain radiography of the right hip
4. Magnetic resonance imaging of the right hip

Mohid Terbi

Answer: 1 - Plain films of the hips, including a frog-leg view, the femur, and right tibia-fibula

Explanations:

- Children with antalgic gait should have plain radiography as a first-line imaging test. This modality is rapid, readily available, and requires no sedation. Fractures and bone lesions usually are readily apparent on plain radiography. Changes consistent with osteomyelitis, such as periosteal reaction, can be seen on plain radiography but are not clear until 2 to 3 weeks of infection.
- Hip ultrasound is fast, readily available, and does not expose the child to ionizing radiation. This modality is excellent at detecting hip effusions; however, this is a nonspecific finding.
- When imaging the hip in a pediatric patient, always obtain anteroposterior (AP) and frog-leg views. Not only does this allow for comparison views of both the right and left hip, slipped capital femoral epiphysis (SCFE) and Legg-Calve-Perthes disease sometimes are not visible on an AP view. The frog-leg view demonstrates the Kline line, which is a line drawn along the superior edge of the femur. The line should intersect the lateral portion of the superior femoral epiphysis. If it does not, SCFE should be suspected.
- MRI is the criterion standard for imaging children with possible infectious causes of antalgic gait. However, sedation is often needed, and this modality is not readily available at most centers. Consultation with pediatric orthopedics and pediatric infectious disease is recommended in any child in whom osteomyelitis or a septic joint is suspected.

Moni Terbi

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Research Concepts:

Antalgic Gait In Children

StatPearls Knowledge Base

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Moh'd Terbi

Question 447: A 17-year-old man presents because of severe watery diarrhea for three days. He also reports abdominal cramps, mild fever, nausea, and vomiting. The stool samples are submitted, and a bacteria is isolated which is helical-shaped, Gram-negative, microaerophilic, nonfermenting bacterium forming motile rods with a single polar flagellum, and which grows best at 107.6 F. What is the causative agent?

Choices:

1. Vibrio cholerae
2. Campylobacter jejuni
3. Nontyphoidal salmonella
4. Staph aureus

Moh'd Terbi

Answer: 2 - Campylobacter jejuni

Explanations:

- Campylobacter jejuni, previously classified in comma-shaped bacterias but now reclassified, grows best at 107.6 F (42 C), has its reservoir in birds and mammals, and causes gastroenteritis in humans.
- Campylobacter jejuni may be part of the normal flora of different domesticated animals including poultry, sheep, and cattle. Surface waters and soil where animal grazes may be contaminated with C. jejuni. Therefore, C. jejuni outbreaks, which are zoonotic, may result from the ingestion of contaminated water that has not been treated.
- The main symptoms of C. jejuni infection are gastroenteritis, abdominal pain, fever, and malaise. The symptoms often peak at 24 to 48 hours after onset or may last for 7 to 10 days.
- The disease is generally self-limited. Due to the susceptibility of Campylobacter to different antibiotics including macrolides, erythromycin is the drug of choice to treat severe enteritis caused by C. jejuni.

Monika Tertia

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Research Concepts:

Bacterial Gastroenteritis




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improvement.

Moh'd Terbi

Question 448: A 7-year-old child with acrodermatitis enteropathica on oral zinc supplementation presents with pallor and low hemoglobin levels of 8 mg/dl. Peripheral smear reveals a microcytic hypochromic anemia. Iron supplementation was initiated but failed to be of benefit. Which of the following investigations may be most relevant in this condition?

Choices:

1. Serum albumin levels
2. Serum copper levels
3. Serum potassium levels
4. Serum calcium levels

Moh'd Terbi

Answer: 2 - Serum copper levels

Explanations:

- Hypocupremia is a well known adverse effect of prolonged oral zinc supplementation. It can occur as both zinc and copper compete for a common divalent cationic transporter.
- Hypocupremia may present with a refractory microcytic anemia that will not respond to iron until copper levels are normalized.
- Hypocupremia also may present with features of pancytopenia and bone marrow dysplasia.
- Patients on prolonged zinc supplementation require periodic monitoring of serum zinc and copper levels, erythrocyte indices, and complete hemogram.

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Moh'd Terbi

Research Concepts:

Acrodermatitis Enteropathica




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Question 449: During rounds in the intensive care unit, a mechanically ventilated patient appears to have elevated peak pressures and upslanting of the end-tidal CO_2 waveform. Upon examing the patient, there is diffuse wheezing. Which of the following is not a likely cause of these findings?

Choices:

1. Bronchospasm
2. Asthma
3. Chronic obstructive pulmonary disease
4. Mainstem intubation

Moh'd Terbi

Answer: 4 - Mainstem intubation

Explanations:

- Bronchospasm can cause upslanting of the expiratory upstroke of the ETCO2 waveform, as well as elevated peak pressures and diffuse wheezing.
- Asthma can cause upslanting of the expiratory upstroke of the ETCO2 waveform, as well as elevated peak pressures and diffuse wheezing.
- COPD can cause upslanting of the expiratory upstroke of the ETCO2 waveform, as well as elevated peak pressures and diffuse wheezing.
- Mainstem migration of the ETT can cause elevated peak pressures, however, is unlikely to cause upslanting of the expiratory phase of capnography waveform or diffuse wheezing.

Mohd Terbi

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Research Concepts:

Airway Monitoring




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Question 450: An 18-month-old child is brought in with a 3-day history of cough and fever. He has been taking fluids but is not hungry. The only medication his parents have given him is acetaminophen. He has no significant past medical or travel history. Exam shows a temperature of 38.5 degrees Celsius, clear mucosa, dullness to percussion over the left lung with rhonchi, but no rashes or cardiac findings. Chest x-ray shows a left lower lobe infiltrate and opacification of the left lower half of the lung. Lateral decubitus chest x-ray shows the effusion is less than 10 mm thick. Which of the following investigations is not needed?

Choices:

1. Thoracentesis
2. Complete blood count
3. Ultrasound of the left hemithorax
4. Blood cultures

Moh'd Terbi

Answer: 1 - Thoracentesis

Explanations:

- The patient most likely has pneumonia with parapneumonic effusion.
- A decubitus chest X-ray would show if the effusion is free-flowing.
- An ultrasound would also confirm this and assist in thoracentesis for culture.
- Thoracentesis is not done for parapneumonic effusion if the pleural effusion is less than 10 mm thick on lateral decubitus.

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Moh'd Terjoi

Research Concepts:

Parapneumonic Pleural Effusions And Empyema Thoracis




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Question 451: The mother of a 7-year-old boy with Noonan syndrome calls at 4 a.m. to report that he awoke with abdominal pain and had three episodes of bilious vomiting. He underwent esophagogastroduodenoscopy with biopsies the previous morning for suspicion of celiac disease due to an elevated tissue transglutaminase immunoglobulin A and chronic abdominal pain. The procedure was uncomplicated, and he went home by 2 p.m. He gradually developed abdominal discomfort but was able to eat soup for dinner. No reported fever or altered mental status. He is referred to the emergency department, where he is evaluated. His vital signs include a heart rate of 112 beats/minute and normal blood pressure. The remainder of the physical examination is unremarkable. Complete blood count shows the following: white blood cells, 11,000/microL, hemoglobin, 8.8 g/dL, hematocrit 26.4%, and platelets, 260 × 10^3/microL. An abdominal radiograph shows no free air in the abdomen, a mildly distended stomach, and no distended loops of bowel. Which of the following is the next most appropriate imaging study?

Mon'd Terbi

Choices:

1. Chest radiograph
2. Head computed tomography
3. Abdominal ultrasound
4. Abdominal computed tomography

Answer: 3 - Abdominal ultrasound

Explanations:

- The patient in the vignette has abdominal pain and acute bilious emesis without distended small bowel loops on radiography and is anemic after esophagogastroduodenoscopy (EGD) with biopsies. These findings are consistent with a duodenal hematoma (DH) causing obstruction of the duodenal lumen. Duodenal hematoma is an uncommon but important complication of esophagogastroduodenoscopy.
- Abdominal ultrasound can quickly identify the hematoma. Abdominal computed tomography (CT) also can diagnose the problem but carries the additional risk of radiation. Chest radiography may be useful to evaluate other complications of EGD such as mediastinitis, aspiration pneumonitis, or pneumothorax related to positive pressure ventilation used during anesthesia, but his symptoms are not consistent with those problems.
- Risk factors for duodenal hematoma include bleeding diatheses and severe enteropathy. For any patient at risk for a bleeding diathesis undergoing endoscopy, attention to proper technique and follow-up is mandatory. Noonan syndrome patients have platelet dysfunction which can be associated with bleeding problems. Platelet dysfunction may not be apparent on standard coagulation studies or blood counts.
- Management of DH includes supportive care, especially support of nutrition with nasojejunal feedings or total parenteral nutrition in cases of intestinal obstruction.

Mohit Tehlan

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Research Concepts:

Esophagogastroduodenoscopy

StatPearls Knowledge Base

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Moh'd Terbi

Question 452: A 3-year-old female previously unvaccinated is brought in to the emergency department by her mother for a sore throat. The mother states that the patient's voice has been sounding quite muffled, and on exam, there is noted stridor, she is sitting forward with drool noticed from the patient's mouth. What is the next step in this patients management?

Choices:

1. Insert two large-bore peripheral Intravenous lines
2. Use a tongue depressor to explore the posterior oropharynx
3. Have the patient evaluated in the operating room by an otolaryngologist
4. Give racemic epinephrine via nebulized solution

Moh'd Terbi

Answer: 3 - Have the patient evaluated in the operating room by an otolaryngologist

Explanations:

- This patient has epiglottitis, and the first step in management is definitive airway management for presumed imminent deterioration, and this should occur in the operating room with surgical management if needed.
- It is critical to notify consultation such as otolaryngology or general surgery and anesthesiology as quickly as possible, as these patients can quickly clinical decline.
- In conjunction with getting the patient to definitive airway management, antibiotics should be started, typically ceftriaxone, but nothing should be done to startle the child until in the operating room.
- If a plain lateral film is obtained of the neck, it may show characteristic thumbprint sign, indicating epiglottitis. Time should not be taken to do this procedure.

Mahdi Terbi

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Research Concepts:

Stridor




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Question 453: An 11-month-old infant was well until two days ago when she developed a cough and clear nasal discharge. The rest of her family has similar symptoms. Six hours ago the cough became worse, so the child was brought to the emergency department. On initial evaluation, the infant is in moderate respiratory distress with bilateral wheezing, abdominal thrusting, and nasal flaring. SpO2 is 89% on room air. Chest radiograph shows bilateral patchy infiltrates and flattened diaphragms. What is the most appropriate management?

Choices:

1. Inhaled racemic epinephrine and intravenous steroids
2. Inhaled beta agonists and intravenous steroids
3. Supportive care with supplemental oxygen and fluids
4. Intubation and empiric antibiotics

Moh'd Terbi

Answer: 3 - Supportive care with supplemental oxygen and fluids

Explanations:

- This infant's presentation is consistent with bronchiolitis. A respiratory syncytial virus is the most common cause, accounting for approximately 75% of cases.
- Children with bronchiolitis may present with hypoxia and dehydration. The hallmark of management is supportive care.
- Infection of the lower respiratory tract causes obstruction of the small airways. Bronchodilators, including beta-agonists and racemic epinephrine, are not helpful.
- Children with signs of respiratory distress may progress to respiratory failure, but antibiotics are not indicated in bronchiolitis.

Mahdi Terbi

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Research Concepts:

Bronchiolitis




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Question 454: A 17-year-old previously healthy female presents with the complaint of lower extremity weakness and difficulty walking. Her symptoms started approximately 2 days ago and have been getting progressively worse. On exam her vital signs are normal, but strength testing reveals symmetric, bilateral weakness in both proximal and distal muscle groups. A possible cause of her symptoms may be identified during a physical exam revealing the presence of which arthropod?

Choices:

1. Body louse
2. Kissing bug
3. Bed bug
4. Tick

Moh'd Terbi

Answer: 4 - Tick

Explanations:

- Tick paralysis is caused by a toxin secreted by female wood ticks and dog ticks which causes an ascending paralysis. Symptoms usually develop after the tick has fed for four to seven days.
- Victims may present with difficulty walking, weakness, slurred speech, visual disturbances and even flaccid paralysis.
- Tick paralysis should be considered in the differential diagnosis of any patient presenting with an ascending paralysis and a thorough exam performed to identify the presence of a tick, especially on the scalp or back.
- Treatment of this clinical phenomenon is the prompt removal of the tick which can result in resolution of symptoms in just a few hours.

Mohd Terbi

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Research Concepts:

Tick Paralysis




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Question 455: A 13-year-old female presents with a three-day history of intermittent fever, rash, and a painful swollen left knee. Her medical history is significant for an untreated upper respiratory tract infection with pharyngitis about three weeks ago. She is an otherwise healthy adolescent. On physical exam, the skin lesions are erythematous rings with irregular margins, central clearing, and a raised border localized to the trunk. Which serologic test is most likely to help establish the suspected diagnosis?

Choices:

1. Borrelia burgdoferi Western ELISA and Western blot
2. Antistreptolysin O and anti-DNase B antibodies
3. Rapid plasma reagin test and microhemagglutination test for Treponema pallidum
4. Anti-nuclear antibody and anti-double stranded DNA

Moh'd Terbi

Answer: 2 - Antistreptolysin O and anti-DNase B antibodies

Explanations:

- Erythema marginatum is reactive inflammatory erythema most commonly associated with acute rheumatic fever.
- Rheumatic fever occurs after acute group A streptococcal pharyngitis.
- Throat culture is often negative at the time of diagnosis, and proof of group A beta-hemolytic streptococcal (GABHS) infection is established by the presence of high titers of antistreptolysin O and anti-DNase B antibodies.
- Borrelia burgdoferi Western ELISA and Western blot is used in diagnosing Lyme disease. Rapid plasma reagin test and microhemagglutination test for Treponema pallidum are used to diagnose syphilis. Anti-nuclear antibody and anti-double stranded DNA are used to diagnose systemic lupus erythematosus.

Mohd Terbi

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Research Concepts:

Erythema Marginatum




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Question 456: An 18-year-old female patient presents for the evaluation of galactorrhea. She also reports amenorrhea for 2 months. She has no significant past medical history and is not taking any medications. Physical examination was unremarkable. Prolactin level was elevated at 440 (0-25 ng/dl). What is the next best step in management?

Choices:

1. Magnetic resonance imaging (MRI) of the pituitary gland
2. Initiate treatment with dopamine agonists
3. Repeat prolactin levels in 1 month
4. Pregnancy test

Moh'd Terbi

Answer: 4 - Pregnancy test

Explanations:

- The most common cause of milk discharge from the breast is pregnancy. It is important to rule out pregnancy before any further workup or treatment.
- The high levels of estrogen in pregnancy stimulate lactotrophs and cause hyperprolactinemia.
- In patients with preexisting prolactinomas, dopamine agonists are held once the patient becomes pregnant.
- Prolactinomas can increase in size in pregnancy and visual field assessments should be done every trimester.

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Moh'd Terbi

Research Concepts:

Galactorrhea




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Question 457: A 12-year-old adolescent male presents to his primary care provider's office with his mother. The mother is concerned that her son only likes to play with girls, is involved in common plays with them (plays with dolls, feminine toys and avoids rough and tumble plays), often tries to dress up like them for the last six months. This pattern has progressively increased, and the patient tries to dress up like a girl every day and insists on doing so at school as well for the last one month. She is also concerned that whenever she had tried to engage him in addressing the concern, the patient becomes avoidant and secludes himself from the rest of the family. On exam, the patient appears withdrawn, disinterested and makes little eye contact. What should be the next step of management?

Choices:

1. Prescribe hormonal treatment for the child
2. Reassure the mother that this is age appropriate behavior
3. Make a referral for child psychiatry and psychology
4. Make a referral for an endocrinologist

Mehdi Taribi

Answer: 3 - Make a referral for child psychiatry and psychology

Explanations:

- The first step to evaluate the individual for gender dysphoria is to make a referral to child psychiatry and psychology, before getting an endocrinology referral.
- it is important to evaluate, rule out or treat any underlying psychiatric illnesses. For example, possible depression in the case vignette.
- It is important not to neglect or ignore the patient's or parents' concern for gender dysphoria.
- It is appropriate to start hormonal treatment for this patient, but first underlying possible depression should be adequately treated and controlled.

Mahdi Terbi

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Research Concepts:

Gender Dysphoria




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Question 458: A 13-year-old was hit in the face with a baseball.

The nose is not obviously deformed but there is severe swelling of the nasal septum almost occluding both nares. Which of the following would be appropriate management?

Choices:

1. Ice packs every hour for the next day
2. Evaluation by an otolaryngologist within a few hours
3. Evaluation by an otolaryngologist in one week
4. Nasal bone radiographs

Moh'd Terbi

Answer: 2 - Evaluation by an otolaryngologist within a few hours

Explanations:

- A septal hematoma is a surgical emergency.
- It must be evacuated to prevent compromise of the blood supply.
- Failure to do so results in a saddle-nose deformity.
- A nasal septal hematoma is purely a clinical diagnosis and no radiological examination is generally required to make the diagnosis.

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Research Concepts:

Moh'd Terro

Nasal Septal Hematoma




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Question 459: A 7-month infant is brought in with a progressive rash, irritability, and diarrhea. There is scaly, dry eczematous skin, erythematous patches, and crusty erosive pustular lesions. They are located around the mouth, on the cheeks, and on the hands and feet. Which of the following questions would be most important?

Choices:

1. Did the mother stop breastfeeding before the symptoms started?
2. Are there any other members of the family that are sick?
3. Has the family been remodeling?
4. Is the child in daycare?

Moh'd Terbi

Answer: 1 - Did the mother stop breastfeeding before the symptoms started?

Explanations:

- Dermatitis, diarrhea, and irritability suggest the diagnosis of acrodermatitis enteropathica.
- It is often seen during weaning as breastfeeding masks this defect.
- There is a zinc deficiency secondary to a mutation in a zinc transporter protein.
- Lifelong zinc supplementation is required in affected individuals

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Moh'd Terbi

Research Concepts:

Acrodermatitis Enteropathica




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Question 460: A 15-year-old female is brought to the clinic for evaluation of primary amenorrhea. Her mother states that the patient started pubertal changes at age 11 but did not seem to progress. Her rate of growth has been low normal for age and there has been no menarche. Physical examination shows Tanner stage III breast development and Tanner III-IV pubic hair. There are no dysmorphic features on physical exam. Upon review of systems, the patient states that she has had some headaches. What is the next best step in the management of this patient?

Choices:

1. Order brain MRI
2. Order blood chromosomes for karyotype
3. Order pituitary function tests including thyroid and prolactin
4. Reassure parent that everything is fine and follow up in six months

Moh'd Terbi

Answer: 3 - Order pituitary function tests including thyroid and prolactin

Explanations:

- Hormonal testing is the best option as abnormalities of pituitary hormones can delay/prolong puberty. This patient had elevated prolactin from a prolactin-secreting adenoma.
- Elevated prolactin levels can cause delayed puberty, primary amenorrhea, or secondary amenorrhea.
- Pituitary function tests should always be checked first in delayed puberty patients.
- Ordering a brain MRI would be the next step once an abnormality like elevated prolactin is confirmed. If the patient had primary hypothyroidism, a brain MRI would not be indicated. Ordering chromosomes would be indicated if the patient had signs of primary ovarian failure like elevated LH and FSH levels. Once puberty starts, it should progress. Most females have menarche on average 2 years after breast development but can take up to 4 years. This patient is only Tanner stage III for breast development 4 years after pubertal changes started. Follow up in six months would not be appropriate.

Mahir Terki

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Research Concepts:

Delayed Puberty



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Moh'd Terbi

Question 461: A 10-year-old female complains of low back pain for the last three weeks. She does gymnastics in high school since childhood. The pain is located in the lower back, non-radiating, and exacerbates with activity. What is the most likely diagnosis?

Choices:

1. Vertebral fracture
2. Spondylolysis
3. Muscular strain
4. Disc herniation

Moh'd Terbi

Answer: 2 - Spondylolysis

Explanations:

- Injury of the pars interarticularis is one of the most common identifiable causes of ongoing low back pain in adolescent athletes.
- Divers, rowers, gymnasts, weight lifters, wrestlers, and throwing track and field athletes have higher rates.
- The most frequently presenting complaint is low back pain, either localized or diffuse. The pain is usually exacerbated by trunk hyperextension or rotation exercises.
- There is no acute trauma for vertebra fracture diagnosis. Muscle strain can be possible, but it should relieve with painkillers and rest within a few weeks. Disc herniation usually provokes leg pain and sciatica.

Mohd Terbi

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Research Concepts:

Pars Interarticularis Injury




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Question 462: A 17-year-old male football player presents for evaluation of shoulder pain after another player tackled him and fell on his shoulder. He did not feel a "pop" and was able to play the rest of the day. However, the pain has progressively worsened. On general inspection, there is no acute abnormality, deformity, or dislocation. There is pain to palpation at the acromioclavicular joint. Adduction of the arm across the body elicits pain. Radiographs of the shoulder show no fractures or dislocation. According to the Rockwood classification, what type of acromioclavicular injury does this patient have?

Choices:

1. Type I
2. Type III
3. Type II
4. Type V

Moh'd Terbi

Answer: 1 - Type I

Explanations:

- In type I injuries, the acromioclavicular ligament is sprained, and the coracoclavicular ligament is intact. There are no radiographic abnormalities.
- In type II injuries, the acromioclavicular is torn, and the coracoclavicular ligament is sprained. The clavicle is elevated superiorly but not above the acromion.
- In type III injuries, the acromioclavicular and coracoclavicular ligaments are torn. The clavicle is elevated superiorly above the border of the acromion.
- In type IV injuries, the acromioclavicular and coracoclavicular ligaments are torn. The clavicle is displaced posteriorly into the trapezius.

Mohud Terbi

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Research Concepts:

Acromioclavicular Joint Injury




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Question 463: A 12-year-old female is brought in by her mother with a three-month history of limping during the morning. The mother states that she also limps after having a nap and that she has become clumsier recently. She has gradually developed knee and ankle swelling in her right leg. She has no past medical history. Given the likely diagnosis, which of the following laboratory examination results are expected?

Choices:

1. Complete blood count is almost always normal
2. Antinuclear antibody is always negative
3. Erythrocyte sedimentation rate is usually elevated
4. Rheumatoid factor is commonly positive

Moh'd Terbi

Answer: 1 - Complete blood count is almost always normal

Explanations:

- Juvenile idiopathic arthritis (JIA) is described as a heterogeneous group of idiopathic inflammatory arthritis affecting children younger than 16 years of age and lasting six weeks or longer.
- The complete blood count (CBC), erythrocyte sedimentation rate, and C-reactive protein are typically normal in oligoarticular juvenile idiopathic arthritis.
- The diagnosis is based on the history and physical exam. There is no specific laboratory result to support a diagnosis of JIA.
- The antinuclear antibody is positive in 40% to 60% of these children, usually in relatively low titers. The positive rheumatoid factor in all JIA subtypes is 2 to 7%. The rheumatoid factor is typically negative in oligoarticular JIA.

Mon'd Terbi

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Research Concepts:

Juvenile Idiopathic Arthritis




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Question 464: A 3-year-old child is referred because of a possible hearing problem. Initially, his parents were worried he might have autism because he did not respond to questions and was not very communicative. The patient was born at 36 weeks via vaginal delivery, and the mother had no antenatal care. The neonatal screening was normal; however, on repeat audiometry, he was found to have a bilateral sensorineural hearing loss. The subsequent referral also revealed head circumference was small for his age. What test could have been at birth that may have identified the issue sooner?

Choices:

1. Urine and blood test
2. MRI of the brain
3. Oto-acoustic emissions
4. Lumbar puncture

Moh'd Terbi

Answer: 1 - Urine and blood test

Explanations:

- Cytomegalovirus is detected in the first 3 weeks of birth by blood or urine sample. 90% of neonates with congenital CMV in utero are asymptomatic.
- Those with symptoms at birth can present with a broad range of problems, including microcephaly, hyperbilirubinemia, intracranial calcifications, and neurological deficits.
- Sensorineural hearing loss is the most common presentation of congenital CMV infection that occurs in initially asymptomatic children. It can be unilateral or bilateral and varies widely in severity and progression.
- Oto-acoustic emissions and automated brainstem responses often do not show an impairment. MRI may be performed as part of the work-up for congenital CMV; however, this would be guided by the presence of other neurological symptoms and signs.

Alenia Terbi

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Research Concepts:

Pediatric Hearing Loss




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Question 465: A three-month-old male infant is brought by his mother with complaints of vomiting. This family was visiting their relatives from a different state, and prior medical information is not available for immediate review. The mother speaks a foreign language and cannot immediately communicate with the clinical team. She shows them a bed sheet with vomitus, which is bile stained. On examination, the baby is alert and interactive. His vital signs show a heart rate of 120 beats per minute, respiratory rate of 40 breaths per minute, blood pressure of 76/46 mmHg, and capillary refill is less than 2 seconds. Abdominal examination reveals a distended abdomen with a wrinkled, raisin-like appearance. No organomegaly is noted. The patient has another episode of bilious emesis. Which of the following is the next best step in the management of this patient?

Choices:

Mohsen Farbi

1. Renal ultrasound
2. Upper gastrointestinal contrast radiograph
3. Magnetic resonance imaging (MRI) of the abdomen
4. Barium enema

Answer: 2 - Upper gastrointestinal contrast radiograph

Explanations:

- Prune belly syndrome (PBS) is a rare, congenital disorder characterized mainly by the clinical triad of deficient abdominal musculature (prune-like appearance), cryptorchidism, and urinary tract abnormalities. Patients with PBS also demonstrate a variety of extrarenal abnormalities involving gastrointestinal, pulmonary, cardiac, and musculoskeletal systems.
- A computed tomography (CT) scan and ultrasound can also be useful imaging tests in the diagnosis of a possible midgut volvulus or obstruction and would typically show a "whirlpool sign", but the upper GI series is still the preferred initial modality. MRI is not recommended.
- Bilious emesis usually indicates bowel obstruction distal to the level of hepatopancreatic ampulla (also known as the ampulla of Vater) and is a surgical emergency. Malrotation has increased prevalence in PBS, and bilious emesis usually indicates midgut volvulus. An upper gastrointestinal contrast radiograph and an immediate pediatric surgical consultation are required to evaluate this complication. A delay in diagnosis and treatment can result in midgut necrosis due to interruption of the vascular supply and subsequent severe short bowel syndrome.
- Urinary tract infections, obstructive uropathy, and renal failure can present with emesis in infants with PBS but mostly present with non-bilious emesis.

Mehri Tehrani

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Research Concepts:

Prune Belly Syndrome

StatPearls Knowledge Base

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Moh'd Terbi

Question 466: A 13-year-old female presents because she has not had a menstrual cycle for the past three months. She reached menarche 14 months ago and previously menstruated every 30 to 40 days with 5 to 7 days of bleeding. She has never been sexually active. She enjoys running and swimming in her spare time. Height and weight are within normal limits for her age. Her mother recently had a total abdominal hysterectomy because of excessive bleeding. The urine pregnancy test is negative. Which of the following is the most appropriate next step in managing this patient?

Choices:

1. Draw blood
2. Reassurance and follow-up
3. Ultrasound
4. Genetic testing

Moh'd Terbi

Answer: 2 - Reassurance and follow-up

Explanations:

- During the first few years following menarche, the hypothalamic-pituitary-ovarian axis is not fully developed. This often causes transient secondary amenorrhea and is likely to correct itself with time.
- Irregular menstrual cycles during the first few years following menarche rarely warrant an extensive workup because of their likely physiologic origin. Diagnostic studies are indicated if the amenorrhea persists for any significant length of time without an obvious cause.
- Amenorrhea is defined as a lack of menstrual bleeding. Primary amenorrhea (lack of menstrual bleeding in a female who has never previously menstruated) should be investigated in females who, by age 13, do not achieve menarche or show signs of pubertal development.
- Secondary amenorrhea is defined by the cessation of menstrual cycles in a female who previously underwent menarche.

Mich'd Terry

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Research Concepts:

Amenorrhea




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Question 467: A patient complains of pain and swelling over the third metacarpophalangeal joint. He reports he was in a fight a day earlier and hit his opponent, knocking out a couple of teeth. The area is swollen and red with decreased range of motion secondary to pain. Which of the following is the greatest cause for concern?

Choices:

1. Boxer fracture
2. Tendon injury
3. Septic joint
4. Clostridium tetani infection

Moh'd Terbi

Answer: 3 - Septic joint

Explanations:

- A clenched fist injury from the penetrating teeth of an opponent's mouth can result in a serious infection, even if the joint is not penetrated.
- The patient will need orthopedic consultation.
- Admission and intravenous antibiotics may also be necessary.
- A boxer fracture occurs at the fourth or fifth metacarpals.

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Research Concepts:

Moh'd Terbah

Septic Arthritis




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Question 468: A 15-year-old male complains of significant clavicular pain after falling onto an outstretched hand. He states that he heard a "popping" sound with subsequent severe pain. X-rays reveal a midshaft clavicular fracture with superior migration of the medial fragment. Which structure is most likely responsible for this migration?

Choices:

1. Interclavicular ligament
2. Sternohyoid muscle
3. Sternoclavicular ligament
4. Sternocleidomastoid muscle

Moh'd Terbi

Answer: 4 - Sternocleidomastoid muscle

Explanations:

- The clavicle is the most commonly fractured bone, accounting for 10% of long bone fractures. Depending on the severity of injury, surgical management may be required.
- In this example, the medial fragment migrated superiorly due to the effect of the sternocleidomastoid (SCM). The SCM attaches to the posterior surface of the medial portion of the clavicle. Unilateral SCM contraction causes the head to rotate to the opposite side as well as lateral side bending to the ipsilateral side. Bilateral SCM contraction causes neck flexion.
- A clavicular fracture occurring from falling onto an outstretched hand is less commonly seen than direct lateral shoulder contact with an object. Many cases are seen in contact sports when an athlete falls to the ground with direct impact into the ground, causing immense force and pressure across this long bone.
- The clavicle serves as an attachment site for several muscles of the neck and upper extremity that are important for optimal function. Imbalance or injury to any of these structures, or the clavicle itself, may result in significant impairment of upper extremity function and pain.

Mehdi Terki

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Research Concepts:

Anatomy, Shoulder and Upper Limb, Clavicle



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Moh'd Terbi

Question 469: A 17-year-old college student requests advice about influenza vaccination. He mentioned an episode of muscle weakness in the past from which he recovered completely. There is no family history of muscle diseases. On examination, neurological examination was normal. He had a systolic murmur signifying a valvular disorder that was under the care of a cardiologist. Evaluation of other systems was within normal limits. How should the patient be advised?

Choices:

1. A thorough cardiac evaluation is necessary before vaccination
2. Nasal influenza vaccine is indicated
3. The influenza vaccine is contraindicated due to his previous history of muscle weakness
4. Routine vaccination can be given safely

Mohamed Terbi

Answer: 4 - Routine vaccination can be given safely

Explanations:

- The muscle weakness in a young adult with full recovery denotes Guillain-Barre syndrome (GBS), an immune polyradiculopathy.
- The neurological examination and electromyogram will not be helpful after the recovery of the condition.
- The influenza vaccination is considered safe for this patient as an influenza vaccine did not trigger his GBS.
- If the patient developed GBS within six weeks of the vaccine, the patient should never be revaccinated.

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Moh'd Terbi

Research Concepts:

Influenza Vaccine




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Question 470: A patient has edema and a dilated cardiomyopathy due to a dietary deficiency. What is the most likely etiology?

Choices:

1. Thiamine deficiency
2. Vitamin C deficiency
3. Niacin deficiency
4. Pyridoxine deficiency

Moh'd Terbi

Answer: 1 - Thiamine deficiency

Explanations:

- This patient has wet-beriberi, which results from thiamine (B1) deficiency.
- In the developed world, thiamine deficiency most commonly occurs in patients with alcohol use disorder.
- Thiamine deficiency also causes Wernicke-Korsakoff and dry beriberi.
- Dry beriberi manifests as polyneuritis and symmetrical muscle wasting.

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Moh'd Terro

Research Concepts:

Vitamin B1 Thiamine Deficiency




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Question 471: A 14-year-old male has ongoing learning difficulties in school. His older brother also had significant learning problems but ultimately did graduate from high school. The patient presents with a long face, everted ears, and large testes. Which of the following triplet repeats is associated with the suspected syndrome?

Choices:

1. CGG
2. CAG
3. GCG
4. GAA

Moh'd Terbi

Answer: 1 - CGG

Explanations:

- The patient likely has fragile X syndrome, which is an X-linked dominant condition.
- Fragile X syndrome is a triplet repeat condition with extra repeats of CGG.
- This is a problem of the FMR1 gene.
- Fragile X syndrome causes mild to moderate intellectual disability. Features include a long and narrow face, flexible fingers, and large ears and testicles. About a third of cases have features of autism and delayed speech. Hyperactivity and seizures are common. Fragile X syndrome is caused by expansion of the CGG triplet repeat within the fragile X mental retardation 1 gene on the X chromosome. This results in deficient fragile X mental retardation protein which is required for normal development of neuron connections. Genetic testing to determine the CGG repeats in the FMRI gene will confirm a diagnosis. Normally, it is between five and 40 repeats, and fragile X syndrome occurs when it is more than 200. Testing for premutation carriers allows for genetic counseling.

Vilen'a Terbi

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Research Concepts:

Fragile X Syndrome



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Moh'd Terbi

Question 472: A 7-year-old boy is brought to the clinic with excessive oral manipulation of objects, bulimia, and frequent manipulation of genitals. Which of the following is the most common cause of his underlying problem?

Choices:

1. Head injury
2. Vasculitis
3. Herpes simplex encephalitis
4. Ischemic stroke

Moh'd Terbi

Answer: 3 - Herpes simplex encephalitis

Explanations:

- The most common pathology leading to the development of Kluver Bucy Syndrome (KBS) in children is herpes simplex encephalitis.
- The most common pathologies leading to the development of KBS in adults are head injury and stroke.
- KBS is a neuro-psychiatric disorder due to lesions affecting bilateral temporal lobes, especially hippocampus and amygdala.
- Vasculitis is a very rare cause of KBS.

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Moh'd Terbi

Research Concepts:

Kluver Bucy Syndrome




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Question 473: A 17-year-old male from Mexico presents with right upper quadrant pain and episodic diarrhea. He describes his pain as constant, dull, and aching. He says that he has not been feeling well for a few weeks, has no appetite, and has had a fever for the past 24 hours. Bloodwork shows leukocytosis and elevated alkaline phosphatase. An enzyme-linked immunosorbent assay is positive for Entamoeba histolytica. What is the appropriate initial management?

Choices:

1. Amebicidal medication
2. CT scan in anticipation of needing percutaneous drainage
3. Open drainage and antibiotics
4. Observation

Moh'd Terbi

Answer: 1 - Amebicidal medication

Explanations:

- The patient has an amebic liver abscess. The majority of amebic abscesses can be treated with amebicidal agents alone.
- After completion of treatment with tissue amebicides, an amebicidal drug that works inside the intestinal lumen, a lumicide, is administered. Failure to use lumicidal agents can lead to a relapse of the infection. Metronidazole, emetine, and dehydroemetine are such active agents.
- Treatment also entails the use of nitroimidazole, preferably metronidazole, at a dose of 500 mg to 750 mg by mouth three times per day for 10 days. Alternatively, tinidazole 2 grams by mouth daily for 5 days can be used. As parasites can persist in the intestine in 40% to 60% of patients, treatment with nitroimidazole should be followed with a luminal agent such as paromomycin. Metronidazole and paromomycin should not be given at the same time because diarrhea, a common side effect of paromomycin, can make assessing response to therapy difficult.
- Therapeutic aspiration, usually through image-guided percutaneous needle aspiration or catheter drainage, is occasionally required. It should be considered in patients with no clinical response to antibiotics within 5 to 7 days; once an imaging exam shows an abscess with a high risk of rupture (cavitary diameter of more than 5 cm or presence of lesions in the left lobe); or in cases of bacterial coinfection of an amebic liver abscess.

Mohit Tariq

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Research Concepts:

Amebic Liver Abscess

StatPearls Knowledge Base

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Moh'd Terbi

Question 474: A 17-year-old female presents with a diagnosis of mononucleosis made three weeks ago by her provider. Her mother reports she has steadily worsened since that time despite corticosteroids and one additional visit for intravenous fluids. More recently, her daughter has developed a productive cough, and she has noticed some right lateral neck swelling. She has had near continuous fever, and also a persistent sore throat. Vital signs show a fever of 102 F, pulse 120 bpm, blood pressure of 115/70 mmHg, and 100% oxygen saturation on room air. Exam shows a sick but non-toxic appearing female with a "cord sign" present deep to the anterior border of the sternocleidomastoid on the right side. Also, she has palpable lymphadenopathy present bilaterally. What imaging study listed below is most sensitive for confirming the diagnosis?

Choices:

Moh'd Terbi

1. Chest x-ray
2. Non-contrast CT of the neck
3. CT of the neck with intravenous contrast
4. Doppler ultrasound of the neck

Answer: 3 - CT of the neck with intravenous contrast

Explanations:

- The patient presents with Lemierre syndrome. This is a rare condition, with an estimated incidence of 1/1,000,000. This diagnosis can be very difficult to make early in the course of the illness when the symptoms are very similar to common self-limited oropharyngeal infections. As the disease progresses, tenderness in the lateral neck becomes more prominent. A "cord sign," which represents thrombosis of the internal jugular vein, and presents as tenderness and swelling deep to the anterior border of the sternocleidomastoid, may be present.
- The imaging modality most used to establish the diagnosis of Lemierre syndrome is CT with IV contrast. The chest should be included as septic emboli are likely. It has the advantage of being able to detect internal jugular vein thrombosis as well as pulmonary septic emboli. Magnetic resonance venography (MRV) is likely more sensitive in the diagnosis, but it is a more difficult study to obtain and requires a hemodynamically stable patient. Ultrasound is useful to follow clot progression, but may miss acute clot and is not as sensitive secondary to the anatomic constraints of the neck and the lack of fibrin in a fresh clot.
- In addition to internal jugular vein thrombosis shown on imaging studies, other findings indicative of Lemierre syndrome include (1) Isolation of the causative organism from blood cultures. Fusobacterium necrophorum is the most common. (2) Evidence for septic emboli. These are most commonly seen in the lung but may affect almost any organ. There may be laboratory evidence of end-organ dysfunction or abscess. (3) Precedent oropharyngeal infection. (4) Evidence of sepsis.
- A high degree of clinical suspicion must be used to make a diagnosis of Lemierre syndrome. A healthy patient who is clinically deteriorating after a precedent oropharyngeal infection, especially with evidence of septic emboli should prompt the

Moh'd Tarbi

clinician to order the appropriate study to evaluate for internal jugular vein thrombosis.

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Research Concepts:

Lemierre Syndrome




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Moh'd Terbi

Question 475: A 7-year old male is seen in the neurology clinic because of seizures. The mother was told he had a genetic disorder that may someday also affect his heart, lungs, skin, and kidneys. He has had extensive genetic workup which has revealed mutations in the TSC1 and TSC2 genes. What is the most common type of skin lesion in these children?

Choices:

1. Nodular acne
2. Hemangioma
3. Adenoma sebaceum
4. Vitiligo

Moh'd Terbi

Answer: 3 - Adenoma sebaceum

Explanations:

- The most obvious skin lesion in tuberous sclerosis is adenoma sebaceum, which is often delayed in its presentation. It tends to occur in early adolescence and is not related to either excessive sebum or acne.
- Adenoma sebaceum is a misnamed cutaneous disorder consisting of angiofibromas that begin in childhood (generally present between 2–5 years of age) and appear clinically as red papules on the face especially on the nasolabial folds, cheek, and chin mostly thought to be acne not responding to treatment.
- The lesion is often mistakenly diagnosed as freckles.
- Other skin lesions include gingival fibroma, ash leaf macules, and shagreen patches on the forehead or trunk.

Mohd Terbi

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Research Concepts:

Tuberous Sclerosis




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Question 476: An abdominal ultrasound in a 12-week pregnancy reveals protrusion of intestinal contents into the umbilical cavity but no free-floating bowel loops. There is polyhydramnios and the abdominal circumference is small. This condition most frequently is associated with which syndrome?

Choices:

1. Klinefelter syndrome
2. Turner syndrome
3. Patau syndrome (trisomy 13)
4. Sotos syndrome

Moh'd Terbi

Answer: 3 - Patau syndrome (trisomy 13)

Explanations:

- Omphalocele is a congenital, midline abdominal wall defect that occurs at the base of umbilical cord insertion.
- The defect is usually large enough to permit herniation of bowel contents. The contents usually are surrounded by a sac. When the defect is very large, the liver can protrude through the defect.
- The condition is most frequently associated with Patau syndrome (trisomy 13) but also can be seen in Down syndrome and Edwards syndrome.
- Omphalocele has higher morbidity rates than gastroschisis because it is more frequently associated with other anomalies.

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Moh'd Terbi

Research Concepts:

Omphalocele




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Question 477: A young Asian couple presents to the clinic anxious about their firstborn. The baby is seven days old, female, born normally with a birth weight of 2.55 kg. They report the baby has been breastfeeding but has frequent loose stools and 7-8 episodes of urination per day. They show an earlier report taken two days ago showing bilirubin of 9.4 mg/dL. On evaluation, weight is 2.4 kg, yellow discoloration is visible, and bilirubin is 14.5 mg/dL. Which of the following is the most appropriate advice for the couple?

Choices:

1. The mother and child need support by admission for inpatient care
2. The baby has breast milk jaundice; stop breastfeeding for 48 hours and replace it with artificial feeds; recheck the bilirubin in 48 hours
3. The newborn will regain birth weight by 10 days; breast milk jaundice is very common, and no need for follow-up
4. Weight loss is physiological; breastfeeding feedings should increase to 8 to 10 times per day, and recheck the bilirubin in 24 hours

Mohamed Terbi

Answer: 4 - Weight loss is physiological; breastfeeding feedings should increase to 8 to 10 times per day, and recheck the bilirubin in 24 hours

Explanations:

- The weight of newborns normally reduces in the first week, and this will be regained in 10 to 14 days.
- Frequent loose stools and micturition is normal in newborns and serves as a sign of sufficient feeding.
- Breast milk jaundice is managed by continuing breastfeeding.
- Another option is the addition of small quantities of artificial feeding with every breastfeeding. The mother should continue breastfeeding without interruption.

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Moh'd Terbi

Research Concepts:

Breastfeeding




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Question 478: A patient with history of Kawasaki disease presents for follow-up two years after initial diagnosis. He has a known aneurysm from the disease that is being followed. The cardiologist wishes to further evaluate the aneurysm for possible intervention. Why would cardiac catheterization and percutaneous intervention be a poor option for this patient?

Choices:

1. His aneurysm has likely resolved at this point and the procedure is unnecessary
2. The arteries would be better evaluated with CT or MR angiography
3. The contrast could cause acute kidney injury
4. High risk for worsening of aneurysm and perforation

Moh'd Terbi

Answer: 4 - High risk for worsening of aneurysm and perforation

Explanations:

- Coronary artery aneurysms (CAA) have been shown to resolve in about half of patients 1 to 2 years from the initial diagnosis. Most CAA regress, but those which are large, especially greater than 8 mm, proximal, or saccular are more likely to persist and become symptomatic.
- Both CTA and MRA are other viable options to evaluate the coronary arteries for an aneurysm on initial evaluation with or instead of an echocardiogram.
- Coronary angiography can be of use in patients who have known complex lesions to further evaluate for stenosis.
- Patients who have known coronary aneurysms should not undergo percutaneous intervention due to being high risk for worsening of existing aneurysms and high risk of perforation. They are likely candidates for coronary artery bypass grafting if their lesions are severe and symptomatic.

Mohsen Taribi

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Research Concepts:

Kawasaki Disease




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Question 479: A 17-year-old male presents with a painful, swollen right knee for 48 hours. He denies any trauma. On examination, the right knee is swollen and warm, with moderate knee effusion and a range of motion of 20 to 50 degrees. X-ray is unremarkable, and arthrocentesis yields turbid fluid. Synovial fluid analysis shows 80,000 white blood cells/mL and greater than 92% polymorphonuclear neutrophils. What is the best next step in management?

Choices:

1. Operative irrigation and drainage of the knee followed by IV antibiotics
2. IV antibiotics for two weeks followed by oral antibiotics
3. Non-steroidal anti-inflammatory drugs plus allopurinol
4. Urgent ultrasound directed aspiration of the fluid

Moh'd Terbi

Answer: 1 - Operative irrigation and drainage of the knee followed by IV antibiotics

Explanations:

- Septic arthritis is an orthopedic emergency.
- It usually shows synovial fluid leukocytosis, with 50,000 to 200,000 white blood cells/mL and over 90% polymorphonuclear neutrophils (PMNs).
- White blood cell count and PMNs from arthrocentesis are the strongest predictors for septic arthritis.
- Operative irrigation and debridement of a septic joint is the mainstay of treatment, along with antibiotics.

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Moh'd Terbi

Research Concepts:

Knee Effusion




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Question 480: A 14-year-old girl presents with persistent firm swelling of the lower lip for one year that prevents her from fully opening the mouth. She also looks underweight and gives a history of intermittent pain abdomen and diarrhea with occasional blood in stools. Examination reveals firm swelling of the lower lip with moderately deep longitudinal fissures and few resolving aphthae. Anthropometry shows that she is underweight and short for her age. Blood reports show anemia. Biopsy from the swelling reveals granulomatous infiltrate comprising of epithelioid cells, Langhans giant cells, and lymphocytes. Colonoscopy shows cobblestoning of the intestinal mucosa along with ulceration at places. Which of the following is the most appropriate treatment option?

Choices:

1. Anti-tubercular therapy
2. Vitamin B12 supplementation
3. Infliximab
4. Anti-leprosy treatment

Moh'd Terbi

Answer: 3 - Infliximab

Explanations:

- The question describes a typical case of Crohn disease with the presentation of cheilitis granulomatosa. Amongst the options mentioned, infliximab is the most appropriate treatment option for this patient.
- This case presents with persistent swelling of the lip with histopathology revealing epithelioid cell granulomas suggesting cheilitis granulomatosa. Moreover, she is underweight and of short stature indicating chronic malnutrition with gastrointestinal symptoms. This, combined with the colonoscopic picture of cobblestoning and ulcerations, is highly suggestive of Crohn disease.
- Among the treatment options listed, Infliximab is a drug effectively used to treat Crohn disease. Other treatment options for Crohn disease include antibiotics like metronidazole, aminosalicylates, systemic corticosteroids, immunomodulators, and other biological therapy.
- Treatment with anti-tubercular therapy and anti-leprosy therapy should not be confused with in this case scenario. Although the histopathology may show overlapping features, other features in the case do not support a diagnosis of either tuberculosis or leprosy.

Mona Terbi

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Research Concepts:

Cheilitis Granulomatosa

StatPearls Knowledge Base

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Moh'd Terbi

Question 481: A 3-year-old male is brought to the healthcare provider by his mother after he developed fever, diarrhea, and, more recently, blood in the stool. The family had a barbeque recently, and a lot of people got sick. Over the next 24 hours, the patient becomes lethargic and pale. His urine output drops, and his face becomes swollen. A complete blood count shows a hemoglobin of 8.5 g/dL and a platelet count of 65000/microliter. Urinalysis reveals proteinuria and hematuria. What treatment is most appropriate for this patient?

Choices:

1. Trimethoprim/sulfamethoxazole
2. Ampicillin
3. Supportive treatment
4. Corticosteroids

Moh'd Terbi

Answer: 3 - Supportive treatment

Explanations:

- The hemolytic uremic syndrome shows a triad of hemolytic anemia, renal insufficiency, and thrombocytopenia.
- Supportive care with intravenous fluids is the mainstay treatment for hemolytic uremic syndrome. The use of antibiotics has proven to worsen the outcome of this condition.
- The causative organism is Escherichia coli 0157:H7 and produces verotoxin.
- It is most often due to fecal contamination of undercooked hamburger.

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Moh'd Terbi

Research Concepts:

Hemolytic Uremic Syndrome




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Question 482: A mother is bringing her 4-year-old son to his follow-up appointment after having been diagnosed with Kawasaki disease. When discussing possible complications from the disease, the mother would like to know what her child's risk factors are for developing a coronary artery aneurysm. The child is white and had common lab abnormalities on initial presentation and had an uneventful treatment course. What is this child's greatest risk factor?

Choices:

1. Age
2. Sex
3. Thrombocytosis
4. Anemia

Moh'd Terbi

Answer: 2 - Sex

Explanations:

- Patients who are diagnosed with Kawasaki disease at less than one-year-old are at an increased risk for developing coronary aneurysms.
- Male sex is associated with a significant risk of developing Kawasaki disease and suffering from complications from the disease.
- Thrombocytosis is a common initial lab abnormality in children with Kawasaki disease. Thrombocytopenia at initial presentation is associated with a higher risk of developing coronary aneurysms.
- Normocytic anemia is a common presentation at the time of initial diagnosis of Kawasaki disease. The severity of anemia has not been associated with disease course or complications.

Wan'd Terbi

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Research Concepts:

Kawasaki Disease




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Question 483: A 28-year-old G2P1 woman notes that fetal movements were less during this pregnancy than in prior pregnancies. At birth, the infant is floppy and has very feeble arm and leg movements. The infant cannot feed, has difficulty breathing, and has a weak cry. What is the most likely diagnosis?

Choices:

1. Cerebral palsy
2. Duchenne muscular dystrophy
3. Werdnig-Hoffmann disease
4. Polio

Moh'd Terbi

Answer: 3 - Werdnig-Hoffmann disease

Explanations:

- Werdnig-Hoffmann disease, or type 1 spinal muscular atrophy, is characterized by a floppy baby. Marked hypotonia at birth is present.
- Weakness is a prominent feature, and proximal weakness predominates.
- Affected children can never sit or stand up and may require prolonged respiratory support to survive.
- Children born with Werdnig-Hoffman disease have normal intelligence.

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Moh'd Terbi

Research Concepts:

Werdnig Hoffmann Disease




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Question 484: After a hard tackle, a college football player had significant knee pain, medial knee tenderness, and knee instability. The athletic trainer evaluated him immediately with the valgus stress test and noted laxity of the medial collateral ligament. Where was the player most likely hit to produce this injury?

Choices:

1. The back of the leg
2. The front of the thigh
3. The outer aspect of the lower thigh
4. The inner aspect of the lower thigh

Moh'd Terbi

Answer: 3 - The outer aspect of the lower thigh

Explanations:

- A medial collateral ligament (MCL) injury can be caused by traumatic contact to the outer aspect of the lower thigh or upper leg.
- A patient with an MCL injury will present with pain (ranging from mild to severe), stiffness, swelling, tenderness of the medial knee, and knee instability.
- The valgus stress test assesses the laxity of the MCL and is performed by applying gentle valgus stress with one hand on the outside of the knee and the other hand on the medial ankle.
- Assessment of the MCL is best within 20-30 minutes of injury before pain, swelling, and muscle spasms begin.

Mahdi Terbi

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Research Concepts:

Anatomy, Bony Pelvis and Lower Limb, Knee Medial Collateral Ligament




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Question 485: A 6-month-old female infant is brought to the clinic with her father. He complains of new onset "whiteheads" and "blackheads" on his daughter's cheeks. Examination confirms the presence of comedones, along with a few inflammatory papules and pustules. The lesions are distributed on her cheeks and chin as well. There are no signs of hyperandrogenism. The caregiver is to be educated on his daughter's condition. Which is the most appropriate in terms of the specific diagnosis?

Choices:

1. In general, many cases have a mild to moderate course, resolving by 1 to 2 years of age without treatment
2. It does not result in scarring
3. Most commonly affects children at 4 to 6 weeks of age
4. Equally common in both sexes, however, it tends to be more severe in males infants

Moh'd Terbi

Answer: 1 - In general, many cases have a mild to moderate course, resolving by 1 to 2 years of age without treatment

Explanations:

- True infantile acne affects the cheeks, forehead, and chin and presents in children approximately six weeks to 1 year of age. Infantile acne affects both sexes, but, unlike acne vulgaris of adolescent patients, it is more common in males. Sex does not affect severity. In most cases, the course is mild to moderate and tends to resolve spontaneously without intervention.
- The lesions found in infantile acne include comedones, often associated with inflammatory papules, pustules, nodules, and cysts. It may sometimes result in scarring.
- Acne vulgaris initially presenting in prepubertal children aged 1 to 7 is very rare. It is a possible indication of higher levels of androgens than is expected for the age of the child (i.e., a hyperandrogenic state), resulting in additional signs of precocious puberty and/or virilization. If present, further diagnostic workup and referral and consultation with a pediatric endocrinologist are warranted.
- Infantile acne is more common in males. Hormone abnormalities in children with acne are associated with congenital adrenal hyperplasia, Cushing syndrome, 21-hydroxylase deficiency, precocious puberty, androgen-secreting tumors, medications, and premature adrenarche.

Mona Terbi

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Research Concepts:

Infantile Acne

StatPearls Knowledge Base

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Moh'd Terbi

Question 486: A 17-year-old student presents for his routine wellness exam. He denies any current symptoms or complaints. His vitals include a temperature of 98.6 F (37 C), a blood pressure of 110/80 mmHg, a pulse of 97 beats per minute, respiration of 15 breaths per minute, and oxygen saturation of 97% on room air. Physical examination reveals normal bilateral breath sounds. His chest x-ray was normal except for the abnormal origin of the right bronchus high above the carina. What would be the next best step in management regarding this finding?

Choices:

1. Observation only
2. Medical treatment with bronchodilators and anticholinergics
3. CT chest
4. Flexible bronchoscopy

Moh'd Terbi

Answer: 1 - Observation only

Explanations:

- Observation only is appropriate as the patient is asymptomatic.
- When patients are symptomatic and present with non-life-threatening infections, they can be treated medically.
- Referrals to cardiothoracic surgeons for definitive surgery are based on the severity of the patient's symptoms and associated comorbidities.
- Usually, lobectomy or segmentectomy is done based on the location and relation to surrounding structures.

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Moh'd Terbi

Research Concepts:

Tracheal Bronchus




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Question 487: A 2-month-old male presents to your office for his routine vaccinations. The mother is very concerned about a rash he started to have a few days ago. The mother said it does not seem to bother the child, but she notices it's "not normal." On physical exam, the child is recorded in the 50th percentile in height and weight, and there is a mildly erythematous plaque on the vertex of the skull with associated scaling and minimal golden crust. What is the next best step in the management of this condition?

Choices:

1. Corticosteroid cream
2. Conservative management with observation
3. Hepatitis B vaccination
4. KOH preparation

Moh'd Terbi

Answer: 2 - Conservative management with observation

Explanations:

- Corticosteroid cream or foam should be applied to a child with cradle crap if the lesions are very irritated, pruritic, or if the parent's wish to provide treatment for cosmetic reasons. However, it is important to let the parents know the lesions tend to go away by 6 to 12 months of age without treatment.
- A child with classic, non-inflammatory cradle crap should be advised to be observed without unnecessary treatment as the lesions are benign and most resolve by age 6 to 12 months. Ketoconazole shampoo is a conservative option. It is very important to educate the parents on the benign nature of the condition.
- Vaccinations are recommended for all ages and clinicians should follow the CDC recommendations with age-appropriate scheduled vaccines.
- KOH prep is useful to diagnosis Candida albicans to differentiate from eczema and psoriasis.

Moh'd Terbi

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Research Concepts:

Cradle Cap




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Question 488: A 3-month-old male arrives with a sacral dimple in the midline and peripheral darkened, coarse black hair surrounding the dimple. The only notable finding on the exam is that the child's left calf is approximately 6 millimeters smaller than his right calf. Which of the following is the next best step in the management of this patient?

Choices:

1. Ultrasound of the lumbosacral spine
2. MRI imaging of the lumbosacral spine
3. Plain lateral and AP films of the lumbosacral spine
4. No further workup is warranted

Moh'd Terbi

Answer: 2 - MRI imaging of the lumbosacral spine

Explanations:

- Even though an ultrasound of the lumbosacral spine could delineate a low lying conus, it would be difficult to diagnose a fatty filum using ultrasound alone. In addition there is a high rate of false-positives for a low lying conus. MRI imaging of the lumbosacral spine would be the next best step in evaluating this child.
- Definitive imaging using MRI is required to evaluate the patient for significant findings including fatty filum/tethered cord, syrinx, and/or Chiari I malformation. Defining the underlying anatomy would be the next appropriate step to allow the clinician to make appropriate treatment decisions.
- Plain lateral and AP films of the lumbosacral spine would not be useful in further evaluating this child. Any finding of bony abnormalities which still require subsequent MRI imaging to determine the necessity of surgical intervention. Additionally, plain images would not allow for evaluation of a low lying conus or fatty filum. Additionally, a syrinx would not be visualized on these studies.
- No further workup would not be appropriate given the presence of a sacral dimple, associated hairy patch, and muscle asymmetry of the lower extremities. Definitive imaging using MRI would be required to evaluate the patient for important findings including fatty filum/tethered cord, syrinx, and/or Chiari I malformation. Not defining the underlying anatomy would preclude the clinician from making the appropriate treatment decisions.

Monica Terlu

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Research Concepts:

Neural Tube Disorders




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Moh'd Terbi

Question 489: A 12-hours-old female baby with ambiguous genitalia is under evaluation in the newborn nursery. The pregnancy was uncomplicated, and the mother was not taking any medications other than prenatal vitamins. The provider examines the baby and notes a phallus which is 2 cm in stretched length, a 1 mm orifice at the base of the phallus, no visible vaginal opening, and no palpable gonads. The rest of the physical examination is unremarkable. Which of the following enzymes is most likely to be deficient in this patient?

Choices:

1. 11-beta-hydroxylase
2. 17-OH progesterone
3. 17-a- hydroxylase
4. 21-hydroxylase

Moh'd Terbi

Answer: 4 - 21-hydroxylase

Explanations:

- This patient presents with ambiguous genitalia. Classic congenital adrenal hyperplasia is recognized at birth or in early childhood because of ambiguous genitalia, salt wasting, or early virilization.
- Congenital adrenal hyperplasia (CAH) is a group of autosomal recessive disorders resulting from the deficiency of one of the enzymes required for the synthesis of cortisol in the adrenal cortex.
- 21-hydroxylase deficiency is the most common cause of congenital adrenal hyperplasia, accounting for more than 90% of the cases.
- Nonclassic congenital adrenal hyperplasia is generally recognized later, at or after puberty because of oligomenorrhea or virilizing signs in females.

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Research Concepts:

21 Hydroxylase Deficiency




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Question 490: A 16-year-old male with no past medical history presents to the clinic with a complaint of exertional dyspnea for the last few months. He denies any smoking or substance abuse history. Family history is significant for sudden death of one of his paternal uncles at age 24. His physical exam showed blood pressure of 135/87 mmHg, heart rate of 82 beats/minute, the temperature of 98.4 degrees Fahrenheit, and respiratory rate of 12 breaths/minute. His BMI is 24. His physical exam is normal. The electrocardiogram showed signs of left ventricular hypertrophy. What are the expected findings on an echocardiogram?

Choices:

1. Dilated left ventricle with reduced ejection fraction and intra-ventricular thrombus
2. Dilated left ventricle with numerous, excessively prominent trabeculations of the endocardium
3. Right ventricular dyskinesia with apical aneurysms
4. Left ventricular wall thickening with a systolic anterior motion of the mitral valve

Mehdi Kerbi

Answer: 4 - Left ventricular wall thickening with a systolic anterior motion of the mitral valve

Explanations:

- Left ventricular wall thickening with a systolic anterior motion of the mitral valve is present in hypertrophic cardiomyopathy. Symptomatic exertional dyspnea with electrocardiogram findings of left ventricular hypertrophy and a family history of sudden death is suggestive of hypertrophic cardiomyopathy.
- The echocardiogram will reveal diastolic dysfunction, increased left ventricular wall thickening and signs of left ventricular outflow tract obstruction. A systolic anterior motion of the mitral valve is a common finding on the echocardiogram that indicates the presence of left ventricular outflow tract obstruction.
- Right ventricular dyskinesia with apical aneurysms is consistent with arrhythmogenic right ventricular cardiomyopathy (ARVC).
- Dilated left ventricle with reduced ejection fraction and intraventricular thrombus can be seen in patients with dilated cardiomyopathy.

Monia Terbi

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Research Concepts:

Cardiomyopathy Imaging




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Question 491: An 8-month old fully-vaccinated, previously healthy male is brought to the emergency department for lethargy. His parents deny the possibility of accidental ingestion, but they recently fed him some canned peaches from last year's harvest. His temperature is 99.6 F (37.5 C), respiratory rate 9 breaths/minute, pulse 106 bpm, blood pressure 95/50 mmHg, and pulse oximetry 75% on room air. His pupils are dilated, and his breathing is shallow. There are no rashes or signs of trauma. He has a weak gag reflex and minimal response to painful stimuli. After the patient's airway is secured and he is medically stabilized, what is the most appropriate step in managing this patient?

Choices:

1. Administration of broad-spectrum antibiotics
2. Lumbar puncture
3. Electroencephalogram (EEG)
4. Administration of immune globulin

Mohit Terbi

Answer: 4 - Administration of immune globulin

Explanations:

- This patient is on the verge of respiratory failure and needs a definitive advanced airway. Regardless of the diagnosis, assessment of the patient's airway, breathing, and circulation are paramount.
- He likely has developed infantile botulism due to contamination during the canning process of the peaches.
- Gram-positive anaerobic Clostridium botulinum spores cause a decreased release of acetylcholine in the presynaptic cleft, leading to the flaccid paralysis seen in infantile botulism.
- Botulism immune globulin should be administered as soon as possible, even before the diagnosis is confirmed when botulism is suspected. Antibiotics do not treat botulism and can worsen symptoms in some patients.

Moh'd Terbi

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Research Concepts:

Infantile Botulism




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Question 492: A 4-year-old girl is brought to the clinic with a complaint of vaginal bleeding. She has had bloody vaginal discharge for the past 24 hours. There is no history of trauma or exposure to estrogen creams. A review of the systems is positive for bony pains in the lower extremities. On physical examination, she has cafe au lait macules on her lower back that do not cross the midline. Breast development is at SMR 2. Genital examination reveals no pubic hair and bloody vaginal discharge with no associated foul smell. There are no focal deficits on the neurologic exam. Precocious puberty is suspected, and further hormonal testing confirms it. Which of the following additional findings is most likely to be found?

Choices:

1. Mass in the third ventricle on MRI
2. Hypernatremia
3. Decreased calcium levels
4. Decreased TSH levels

Moh'd Terbi

Answer: 4 - Decreased TSH levels

Explanations:

- The clinical triad of irregular cafe au lait macules, fibrous dysplasia of the bones (bony pains), and peripheral precocious puberty is indicative of McCune Albright syndrome. Vaginal bleeding usually precedes breast development.
- This is a sporadic condition attributed to a mutation of the GNAS gene on chromosome 20. These mutations of the alpha subunit of the G stimulatory protein (Gs) activate adenylyl cyclase.
- This results in autonomous activation of the other endocrine pathways. The most common ones include hyperthyroidism, hyperprolactinemia, increased growth hormone, cortisol excess, and hypophosphatemia.
- This condition is not associated with brain lesions, so MRI would generally not be necessary. It is not associated with diabetes insipidus, so hypernatremia is unlikely. There are no parathyroid abnormalities or associated hypocalcemia.

Mehdi Terbi

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Research Concepts:

Precocious Puberty




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Question 493: A 3-year-old previously healthy child presents to the emergency department with altered mental status. The mother states that the child was with his babysitter when he started acting abnormally shortly after lunchtime. She states that the child started having an ataxic gait and insatiable appetite. Shortly afterward, the child became more lethargic, prompting the mother to bring in the child. Vitals are HR 115/min, RR 34/min, T 36.5 C (97.7 F), and BP 96/50 mmHg. Physical exam was normal, except for a fluctuating level of consciousness. Response to the examiner was appropriate. The patient appeared non-toxic and had no focal neurological deficits. CBC, electrolyte panel, erythrocyte sedimentation rate, C-reactive protein, liver function tests, urinalysis, and EKG were all normal. The urine drug screen was performed and returned positive for delta-9-tetrahydrocannabinol. This drug was most likely used in what form?

Choices:

Moh'd Terbi

1. Inhalation
2. Injection
3. Oral
4. Rectal

Answer: 3 - Oral

Explanations:

- The most common overdose incidents in children occur when the drug is combined with food, typically referred to as "edible marijuana." Ingestion of edible products continue to be a major source of marijuana and poses a unique problem because no other illicit drug is infused into a palatable and appetizing form.
- Ingested marijuana can have prolonged and unpredictable effects due to the concentration of marijuana being variable and the rate of marijuana absorption being unpredictable.
- The concentration of marijuana in edibles are not standardized, with some of the products containing four times the suggested dose of 10 mg.
- Many children mistake "edible marijuana" for regular food and eat it unknowingly, as some companies have produced packaging for marijuana products that mimic popular candies. Additionally, marijuana may be mixed in common food products such as brownies, cakes, and beverages, making them indistinguishable from non infused products.

Michio Terui

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Research Concepts:

Marijuana Toxicity




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improvement.

Moh'd Terbi

Question 494: An 8-year-old boy presents with a rash, diffuse periumbilical pain, and mild anorexia. His mother says he had a recent cough and fever that resolved without medication, and she denies any contacts with a similar rash. His temperature is 99.2 F (37.3 C), pulse 89 beats/minute, respiratory rate 14 breaths/minute, and blood pressure 105/72 mmHg. The physical exam is remarkable for small bullae on the nares, oral gingiva, and urogenital region. A complete blood count is normal, and a chest x-ray shows diffuse perihilar lung markings with no evidence of pneumonia or effusion. What are the most likely diagnosis and best management for this patient?

Choices:

1. Hand-foot-mouth disease: prescribe “magic mouthwash”
2. Stevens-Johnson syndrome: transfer to a burn center
3. Varicella zoster virus infection: prescribe oral valganciclovir
4. Mycoplasma mucositis: supportive care and subspecialist follow-up

Mona Terbi

Answer: 4 - Mycoplasma mucositis: supportive care and subspecialist follow-up

Explanations:

- The patient presents with respiratory symptoms followed by a rash, which may be seen in Mycoplasma pneumoniae-induced rash and mucositis (MIRM) or erythema multiforme major.
- The rash pattern of MIRM may be different than other conditions. Mucous membrane involvement, either gastrointestinal or genitourinary, is almost always seen. Ocular involvement is also possible. The cutaneous rash of MIRM is more often sparse rather than consolidated. It is more often located in acral areas (limbs). The type of rash in MIRM is usually vesiculobullous or target lesions.
- Although MIRM may have some long-term sequelae, such as mucous membrane damage and cutaneous skin changes, it usually has a more benign course compared to other conditions, such as Stevens-Johnson syndrome/toxic epidermal necrolysis.
- Treatment of MIRM is not well defined, but patients with active pneumonia should receive organism-directed antibiotics. Consultation with an infectious disease specialist or dermatologist may help to direct care. Patients with ocular or urogenital involvement benefit from close follow-up with subspecialists to manage possible scaring or adhesion formations.

Moni's Tenth

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Research Concepts:

Mycoplasma Mucositis

StatPearls Knowledge Base

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Moh'd Terbi

Question 495: A 5-year old child presents with his mother to the clinician with honey-colored crusting around his nose and mouth. The mother reports that the child initially had red painful sores on the same area and over that past 36 hours the sores have started bleeding and crusting. The mother also reveals that a child in daycare had a similar presentation last week. Which of the following is indicated for the most likely diagnosis?

Choices:

1. Nystatin
2. Imipenem/cilastatin
3. Azithromycin
4. Mupirocin

Moh'd Terbi

Answer: 4 - Mupirocin

Explanations:

- Impetigo is a bacterial infection of the superficial layer of skin and commonly seen in infants and children.
- It is a common and highly contagious skin infection usually appears as red sores on the face, especially around a child's nose and mouth, and on hands and feet. The sores burst and develop honey-colored crusts.
- It is most commonly caused by Staphylococcus aureus or Streptococcus pyogenes.
- Treatment is usually with topical mupirocin or fusidic acid, although oral antibiotics may be employed if the affected area is large.

Mohd Terbi

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Research Concepts:

Impetigo




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Question 496: The parents of a 9-year-old boy with a past medical history of epilepsy and ADHD make a doctor's appointment after the patient suffered a seizure shortly after starting methylphenidate. Before taking the medication, he had been seizure free for 2 years. The parents are concerned and want your opinion on whether it is safe for their child to take this medication. Would you recommend this patient to continue taking methylphenidate?

Choices:

1. Yes, he can still continue to take methylphenidate at the same dosage
2. Yes, he can still continue to take methylphenidate with a lower dosage
3. No, he should discontinue methylphenidate and be slowly tapered off
4. No, he should discontinue methylphenidate immediately

Mem'd Terbi

Answer: 4 - No, he should discontinue methylphenidate immediately

Explanations:

- Methylphenidate should be immediately discontinued if a patient develops seizures or a hypersensitivity reaction.
- Common adverse effects such as insomnia, nervousness, tachycardia, headache, decreased appetite, and abdominal pain are not life-threatening and can be addressed by adjusting the dosage of methylphenidate.
- While rarely seen, priapism can occur with methylphenidate and need to be treated emergently.
- In children with ADHD and on methylphenidate, it is important to follow their growth curves to make sure their height and weight are within the normal percentiles for their age as well as to monitor their heart rate and blood pressure. Methylphenidate can cause suppression of growth.

Mohd Terbi

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Research Concepts:

Methylphenidate




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Question 497: An 11-month-old male was admitted to the hospital with a persistent cough and failure to thrive. His weight and height were below the third percentile. Initial investigation showed a hemoglobin of 6 grams/dL, platelet count 250,000 platelets/microliter, and white-blood-cell count 3,800 cells/microliter. His mother reported that he was having recurrent skin abscesses and had two episodes of pneumonia caused by Staphylococcus aureus. One of his two brothers died from overwhelming infections at the age of 2 years. Now, he is on antimicrobials prophylactically. His immune status shows normal immunoglobulin levels and antibody activity to several antigens including tetanus toxoid. CD4 and CD8 counts are normal. The percentage of neutrophils reducing nitroblue tetrazolium assay before and after stimulation with endotoxin is below the normal range. A mutation in the CYBB gene was found. What is the most likely mode of inheritance of this medical condition?

Moh'd Terbi

Choices:

1. Autosomal dominant
2. Autosomal recessive
3. X-linked recessive
4. X-linked dominant

Answer: 3 - X-linked recessive

Explanations:

- An X-linked recessive pattern is most likely.
- The overall history, the patient being male, and a mutation in the CYBB being found are highly suggestive of chronic granulomatous disease.
- The nitroblue tetrazolium (NBT) dye reduction test confirmed the diagnosis. This assay measures the yellow soluble NBT reduction to blue insoluble formazan by superoxide ions. In this patient, NBT reduction was under the normal limit.
- Recurrent infections by catalase-positive microorganisms suggest a neutrophil functional disorder.

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Moh'd Terbi

Research Concepts:

Chronic Granulomatous Disease




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Question 498: A 7-year old is seen in the emergency room with a wet cough, fever, and general malaise. The work-up reveals that he has lobar pneumonia. He has otherwise been healthy, and he has had all his vaccinations to date. Based on the 2011 guidelines released by the Infectious Disease Society of America, the child should be treated with which of the following?

Choices:

1. Observation only
2. Ampicillin
3. Ceftriaxone
4. Chloramphenicol

Moh'd Terbi

Answer: 2 - Ampicillin

Explanations:

- According to the 2011 national guidelines released by the PIDS and IDSA for the treatment of vaccinated children hospitalized with uncomplicated community-acquired pneumonia, the use of single, narrow-spectrum antibiotics, such as penicillin or ampicillin was emphasized.
- According to experts, the 2011 national guidelines released by the PIDS and IDSA for the treatment of vaccinated children hospitalized with uncomplicated community-acquired pneumonia was based on evidence that Streptococcus pneumoniae most commonly caused the illness and that the incidence of penicillin-resistant pneumococcal disease has dropped after the vaccines' introduction.
- Community-acquired pneumonia is a serious infection in children and often requires hospitalization. The diagnosis can be based on the history and physical examination. Chest radiography and rapid viral testing may be helpful. Viral and Streptococcus pneumoniae infections are most common in preschool-aged children. Mycoplasma pneumoniae is more common in older children. The decision to treat with antibiotics is challenging, especially with the increasing prevalence of viral and bacterial coinfections. Preschool-aged children with uncomplicated bacterial pneumonia should be treated with amoxicillin or ampicillin. Macrolides are first-line agents in older children. Immunization with the 13-valent pneumococcal conjugate vaccine is important to reduce the severity of childhood pneumococcal infections.
- Community-acquired pneumonia is a significant cause of respiratory morbidity and mortality in children, particularly in developing countries. It is the leading cause of death in children younger than five years. Factors that increase the severity of pneumonia in children include prematurity, malnutrition, low

Mona Tehrani

socioeconomic status, tobacco smoke exposure, and child care attendance.

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Research Concepts:

Community-Acquired Pneumonia




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Moh'd Terbi

Question 499: A 7-year-old child presents with a 6-month history of trouble organizing tasks and activities, being easily distracted, talking excessively, and squirming in his seat. He has had interventions with behavioral techniques with minimal results. Which medication would be considered first-line treatment?

Choices:

1. Benzodiazepines
2. Stimulant medications
3. Clonidine
4. Atomoxetine

Moh'd Terbi

Answer: 2 - Stimulant medications

Explanations:

- Stimulant medications are considered first-line treatment for attention-deficit/ hyperactivity disorder (ADHD).
- Central alpha agonists, selective norepinephrine serotonin reuptake inhibitors, and antidepressants are second-line drugs.
- Non-pharmacologic therapy includes parental training, cognitive behavioral therapy, and contingency training.
- While transient, integrating exercise into the daily routine of an ADHD patient can significantly improve functioning for many patients.

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Moh'd Terbi

Research Concepts:

Attention Deficit Hyperactivity Disorder




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Question 500: A 10-year-old male presents to the emergency department with his parents in distress. The family has recently immigrated from Greece and do not speak fluent English. A translator service is utilized to communicate with the patient and family, and it is revealed that he has a past medical history of sickle cell anemia. His blood pressure is 110/65 mmHg, temperature 98.7 F, pulse 95/minute, and respiratory rate 20/minute. After further workup, he diagnosed with a vaso-occlusive crisis in his legs bilaterally. He is admitted to the floor for optimal pain management therapy, and patient-controlled analgesia (PCA) is initiated. Twelve hours after the initiation of PCA therapy, he is discovered to be no longer responsive to auditory stimuli by his parents. His respiratory rate is eight breaths per minute, and his breaths are shallow. All other vital signs are within normal limits. What is the cause of his unresponsiveness?

Choices:

Mohsen Taribi

1. Anaphylactic reaction from the medications used
2. Patient-controlled analgesia (PCA) by proxy
3. Local anesthetic systemic toxicity
4. Acute chest syndrome

Answer: 2 - Patient-controlled analgesia (PCA) by proxy

Explanations:

- PCA by proxy is when someone besides the patient is pressing the button to administer a dose because they believe the patient is in pain and needs it. This has been documented to lead to respiratory depression. Patients, family members, visitors, and health care providers need to be educated about the dangers of someone besides the patient pressing the button before PCA treatment modalities can be used.
- PCA by proxy should be a concern in patients who are accompanied during the hospital stay. Especially when the patient's visitors are concerned parents who wish to help relieve their child's pain. Extreme care should also be taken to explain the function and dangers of PCA to patients and families when a language barrier exists.
- Respiration assessment of the rate, depth, effort, and sound of breaths should be performed to establish a patient baseline respiration before PCA is begun and to monitor the effects of the medications during treatment. These assessments allow for adjustments to be made during administration to meet desired outcomes and to identify any complications.
- Anaphylaxis and local anesthetic systemic toxicity would lead to an increase in respiratory rate along with other pertinent physical exam findings. A run-away pump is a possibility and should be investigated as a cause of the patient's respiratory depression, but would no be the most likely cause in this scenario. PCA by proxy has been documented to respiratory depression and can be a potentially fatal complication of PCA.

Mohit Tehri

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Research Concepts:

Patient Controlled Analgesia




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Moh'd Terbi

Section 6

Question 501: A 17-year-old patient was involved in a motor vehicle accident. He was found to be hypotensive at the scene of the accident and had to be resuscitated. He suffered multiple injuries to his lower extremities and required numerous surgeries and prolonged mechanical ventilation. He was started on a high concentration of enteral glucose feeds on a 24-hour protocol. Four weeks later, he is still dependent on the mechanical ventilator, but his chest x-ray remains clear. He has profound respiratory muscle weakness and the MRI shows significant thinning of the diaphragm. Which of the following is the most likely cause of his muscle weakness?

Choices:

Moh'd Terbi

1. Hypocalcemia
2. Hypophosphatemia
3. Zinc deficiency
4. Hypernatremia

Answer: 2 - Hypophosphatemia

Explanations:

- Low phosphate levels can cause significant weakness of skeletal and smooth muscle, which can affect the eyes as well as the diaphragm.
- Respiratory insufficiency in patients on ventilators is common after hypophosphatemia. Impaired cardiac contractility can also occur and usually reverses when phosphate is reinstituted in the diet.
- Administering high carbohydrate diets can lead to a lowering of phosphate by stimulating insulin release. Insulin moves phosphate into the cells.
- Diabetic ketoacidosis is another important cause of hypophosphatemia. However, routine replacement of phosphate in these patients has not been shown to reduce morbidity or mortality.

Mch'd Terbi

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Research Concepts:

Hypophosphatemia




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Question 502: A 5-month-old male infant is brought to the clinic by his parents due to poor growth. Upon further questioning, the mother expresses that he was also seen in the emergency department one week ago due to fast breathing, hemoptysis, and decreased oral intake. He was seen and diagnosed with a viral illness and discharged home with routine care. As per the mother, he is still breathing fast, is more agitated, and has decreased his oral intake. On physical examination, it is noted that the patient is tachypneic, on auscultation he has bilateral crackles with a harsh systolic murmur and is slightly responsive to stimuli. The patient is admitted, and an X-ray is performed that shows a shadow along the right cardiac border with a cardiac shift to the right side of the chest. Which of the following is a distinctive characteristic of the patient's condition?

Choices:

Mo'ia Terbi

1. Anomalous venous drainage of the right lung
2. Right and left lung hypoplasia with anomalous superior vena cava
3. Butterfly vertebrae
4. Paucity of billiary ducts

Answer: 1 - Anomalous venous drainage of the right lung

Explanations:

- Scimitar syndrome is a rare congenital heart defect, variant of a partial anomalous pulmonary venous return that results in a left-to-right shunt, with a characteristic anatomic feature that resembles a backsword or a saber with a curved blade known as Middle Eastern or Turkish sword, "scimitar."
- The distinct characteristics that constitute scimitar syndrome include: 1- A part or entire anomalous curved venous drainage of the right lung that goes to inferior vena cava;2- Association with variable right lung and pulmonary artery hypoplasia; 3- Dextraposition of the heart; 4- And an anomalous systemic blood supply to the ipsilateral lung.
- Other associated cardiac defects are atrial septal defect (80%), patent ductus arteriosus (75%), ventricular septal defects (30%) and pulmonary vein stenosis (20%); but tetralogy of Fallot, aortic arch hypoplasia or coarctation and hypoplastic left heart syndrome can also be seen.
- Paucity of the biliary ducts and a butterfly vertebrae are some of the characteristics of Alagille syndrome (ALGS), a multisystem autosomal dominant disorder with a wide variety of clinical manifestation, including: hepatic (cholestasis, characterized by bile duct paucity), cardiac (primarily involving the pulmonary arteries), renal, skeletal (butterfly vertebrae), ophthalmologic (posterior embryotoxon), and facial abnormalities.

Monica Terbi

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Research Concepts:

Scimitar Syndrome

StatPearls Knowledge Base

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Moh'd Terbi

Question 503: A patient arrives at the emergency department after having been on the beach for the past three days. Ten hours before his arrival, he observed a tiny puncture wound on the sole of his right foot. Over the past six hours, his foot has become painful, swollen, and red, and he has developed fever with chills. Examination reveals a red, swollen foot with blisters but no crepitus. Radiographs appear normal, but the white blood cell count is 18,000 cells/mm3, and his temperature is 103.4 F (39.7 C). Which of the following is the most appropriate management of this patient?

Choices:

1. Elevate the leg and give intravenous antibiotics
2. Incise the blister for a culture
3. Start antibiotics and immediately take the patient to the operating room
4. Order an MRI to better evaluate the extent of the infection

Mon'd Terbi

Answer: 3 - Start antibiotics and immediately take the patient to the operating room

Explanations:

- This is a classic presentation of a rapidly spreading infection. It has all the markings of either Clostridia or a group B Streptococcus necrotizing soft tissue infection.
- The patient needs to be taken immediately to the operating room for incision and debridement under broad-spectrum antibiotic coverage.
- Any delay increases morbidity and mortality. Imaging, including MRI, is often not diagnostic and can lead to significant delays. Any delay in treatment can lead to death or amputation.
- There is no room for conservative care when necrotizing fasciitis is suspected. In this case, the rapidity and aggressiveness of the infection suggest the need for aggressive treatment.

Mohamed Terbi

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Research Concepts:

Necrotizing Fasciitis




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Question 504: A mother brings in her 4-month-old baby who she reports has no significant past medical history. The patient was born by vaginal delivery at 39 weeks without complication. The mother was group B Streptococcus negative. She reports since birth the patient has been feeding well and has gained weight as appropriate. The child has met all developmental milestones. Over the last week, the mother has noted, especially upon awakening the child she has noted spasm-like movements of the patient extremities where she will flex her arms, legs, and neck. These episodes last less than one minute. The mother notes associated movement of the patient's eyes up and down but reports no respiratory distress. Mother denies fever, vomiting, shortness of breath, or decreased oral intake. Based on the most likely diagnosis what is the first and more appropriate diagnostic test?

Choices:

Moh'd Terbi

1. EEG
2. Lumbar puncture
3. Clinical diagnosis only, reassurance
4. CT of the head

Answer: 1 - EEG

Explanations:

- EEG is the correct initial step for the diagnosis of infantile spasms (IS). As the name and definition of IS entails, the patient will demonstrate spasms. EEG is obtained with special attention to a demonstration of hypsarrhythmia which is a “very high voltage, random, slow waves and spikes in all cortical areas.”
- Lumbar puncture may be pursued during the evaluation of etiological causes of IS but is not the initial diagnostic measure. Lumbar puncture will help to demonstrate infectious causes of IS. Before investigating infectious causes, clinicians should obtain an EEG to demonstrate hypsarrhythmia which is indicative of IS.
- Though IS has specific features it can be difficult to differentiate IS from other infantile diagnoses such as colic, gastroesophageal reflux, spasticity, benign neonatal sleep myoclonus or excessive startles or Moro reflexes up to more severe diagnosis and differentials to include tonic reflex seizures of early infancy, brain injury, and severe myoclonic epilepsies.
- After an EEG neuroimaging is the next step to aid in diagnosis and etiological causes of IS. CT imaging is not the initial neuroimaging of choice as MRI has the highest sensitivity. Neuroimaging will establish the etiology of 70% of cases of IS.

Wen's Tenth

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Research Concepts:

Infantile Spasms

StatPearls Knowledge Base

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Moh'd Terbi

Question 505: A 12-year-old baseball player experiences pain in his shoulder while throwing after pitching in two games on the same day. On physical exam, there is generalized weakness of the throwing shoulder, but no other focal exam findings. Radiographs reveal a wide proximal humeral physis. The patient is told to stop throwing. How long do most people with this diagnosis generally need to rest before returning to play?

Choices:

1. Three months
2. One month
3. Three months after surgery
4. Three months after radiographs are negative

Moh'd Terbi

Answer: 1 - Three months

Explanations:

- Physical exam of Little League Shoulder can be nonfocal.
- Classic radiographic findings are a wide proximal humeral physis although this will not be present in all patients with Little League shoulder.
- Return to play in Little League shoulder typically takes 3 to 6 months after the athlete stops throwing.
- Clinicians do not need to do serial radiographs for Little League shoulder. Negative radiographs are not required prior to beginning a gradual return to play program.

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Moh'd Terbi

Research Concepts:

Proximal Humeral Epiphysiolysis




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Question 506: Which of the following statements is false in regards to the mandatory criteria required for a diagnosis of typical Rett syndrome?

Choices:

1. Period of regression followed by recovery or stabilization
2. Partial or complete loss of acquired purposeful hand skills
3. Abnormal psychomotor development in the first 6 months of life
4. Gait abnormalities

Moh'd Terbi

Answer: 3 - Abnormal psychomotor development in the first 6 months of life

Explanations:

- The mandatory criteria required to make a diagnosis of typical Rett syndrome (RTT) must include a period of regression followed by recovery or stabilization, in addition, all main criteria and exclusion criteria must be met.
- The four main criteria include partial or complete loss of acquired spoken language, partial or complete loss of acquired spoken language, Gait abnormalities: impaired or absence of ability and stereotypic hand movement.
- The exclusion criteria include abnormal psychomotor development in the first 6 months of life and brain injury secondary to trauma, infection or neurometabolic disease.
- Not all individuals with typical RTT will have postnatal deceleration in head growth.

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Research Concepts:

Rett Syndrome




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Question 507: A 17-year-old male presents with a 6-month history of dyspnea on exertion. He complains of swollen legs. He had tuberculosis as a child that was treated with four medications. His electrocardiogram (ECG) is normal. Computed tomography (CT) of the chest shows pericardial calcifications. Which of the following is pertinent to the physical examination findings in this patient?

Choices:

1. Patchy hemorrhage on cardiac magnetic resonance imaging (MRI)
2. Lack of decline in jugular pressure with inspiration
3. High-voltage changes on ECG
4. Cannon A waves in the jugular veins

Moh'd Terbi

Answer: 2 - Lack of decline in jugular pressure with inspiration

Explanations:

- The patient has congestive heart failure secondary to constrictive pericarditis.
- Physical examination findings in constrictive pericarditis include pulsus paradoxus and lack of decline in jugular pressure on inspiration.
- CT scan and cardiac MRI are also frequently done, especially before surgical management of constrictive pericarditis. These can reveal thickened pericardium and the presence of calcifications. CT scans can detect calcifications better compared to cardiac MRI. Cardiac MRI is better to differentiate small effusions from pericardial thickening.
- Cannon A waves are seen with atrioventricular dissociation when the atria contracts against a closed valve. There are no specific signs of constrictive pericarditis on ECG, revealing nonspecific ST changes and low voltage.

Mona Terbi

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Research Concepts:

Constrictive Pericarditis




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Question 508: A 6-year-old female was playing in the woods with her friends in western North Carolina is bitten by a snake. The parents bring her to the emergency department for evaluation immediately. They do not know snake's identity. Physical shows normal vital signs, two puncture wounds in the left ankle with minimal surrounding ecchymosis and mild swelling. Otherwise, the patient appears to be in a usual state of health with normal airway, breathing, and circulation. Coagulation panel is normal. What is the best next step in management?

Choices:

1. Secure airway in anticipation of an impending airway compromise from angioedema
2. Administer 4 to 6 vials of Crotalidae polyvalent immune Fab (Ovine)
3. Observe for 8 hours if not worsening and repeat coagulation labs
4. Discharge with follow up in 2 to 3 days.

Mon'd Terbi

Answer: 3 - Observe for 8 hours if not worsening and repeat coagulation labs

Explanations:

- While airway compromise may happen in this patient, the likelihood is not high enough to warrant intubation at this point.
- Crotalidae polyvalent immune Fab (Ovine) administration should be reserved for patients with at least moderate signs of envenomation.
- This patient has minimal signs of envenomation and should be monitored for 8 hours. If progression of symptoms is witnessed, Crotalidae polyvalent immune Fab (Ovine) should be administered. Otherwise, the patient should receive a repeat set of coagulation panel at the end of the observation period to ensure there are no new abnormalities. If there are no new or worsening symptoms, the patient is appropriate for follow up.
- There can be a delay in the effects of the envenomation, especially if the patient presents early. It is not appropriate to discharge this patient before at least 8 hours of monitoring.

Mon's Terry

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Research Concepts:

Rattle Snake Toxicity




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Question 509: A 4-year-old girl is brought in because she started developing pubic hair and body odor four months ago. Her parents deny breast enlargement and exposure to exogenous steroids. Physical examination demonstrates sexual maturity rating (SMR) 3 pubic hair without breast enlargement. The child's parents are concerned that she appears older than her age, and her shoe size has increased twice in the last four months. Bone age is determined to be 8 years. Given the likely diagnosis, which of the following is expected to be abnormal in this patient's condition?

Choices:

1. Dehydroepiandrosterone sulfate (DHEA-S)
2. Growth hormone
3. 17-hydroxyprogesterone (17-OH progesterone)
4. Follicle-stimulating hormone (FSH)

Moh'd Terbi

Answer: 3 - 17-hydroxyprogesterone (17-OH progesterone)

Explanations:

- This child has secondary sexual characteristics, such as pubic hair development and body odor, in the absence of breast development.
- Based on the presentation and bone age, the likely cause of her peripheral precocious puberty is congenital adrenal hyperplasia (CAH).
- Classic forms of the disease in females usually present with ambiguous genitalia. The nonclassic form presents later with precocious puberty. Excess androgens lead to linear growth acceleration due to conversion to estradiol.
- CAH is due to 21 hydroxy deficiency, and there will be a marked elevation of 17 hydroxyprogesterone (17-OH progesterone) levels.

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Research Concepts:

Precocious Puberty




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Question 510: A 4-year-old Japanese girl presents to the emergency department with a fever and a rash on her extremities. Her mother says the child has not been well for five days. She denies a cough, sore throat, or a runny nose. Examination reveals an ill-looking child with a fever. Examination reveals bilateral conjunctivitis, fissured lips, and a red tongue. She also has a polymorphous rash on both extremities and palpable masses in her neck area. Blood work reveals a WBC of 11.6/microliter and platelets of 212,000/microliter. What is the initial treatment of choice for this child?

Choices:

1. Corticosteroids
2. Antibiotics
3. Oral antifungal drugs
4. Intravenous immunoglobulin (IVIG)

Moh'd Terbi

Answer: 4 - Intravenous immunoglobulin (IVIG)

Explanations:

- The main goal of treatment is to prevent coronary artery disease and provide symptom relief.
- Current treatment for Kawasaki disease includes high-dose aspirin and intravenous immunoglobulin.
- Children unresponsive to immunoglobulin therapy often are given steroids and infliximab infusion.
- Individuals with coronary artery aneurysms are treated with aspirin until the aneurysm resolves.

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Moh'd Terbi

Research Concepts:

Kawasaki Disease




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Question 511: A 4-year-old boy presented with spontaneous raccoon eyes. There was no history of trauma or coagulopathy. On examination, he had a non-tender abdominal lump. Which of the following is the strongest predictor of poor prognosis in this child?

Choices:

1. MYCN amplification
2. 1p deletion
3. 11q deletion
4. ALK amplification

Moh'd Terbi

Answer: 1 - MYCN amplification

Explanations:

- Metastatic neuroblastoma (secondary to tumoral obstruction of the palpebral vessels) can present as Raccoon eyes. Neuroblastoma can present as periorbital ecchymosis in 5.4% of cases.
- MYCN amplification has been reported in around 25% of neuroblastomas.
- MYCN amplification is generally accepted as the strongest predictor of poor prognosis and rapid tumor progression in neuroblastoma.
- Other poor prognostic features of neuroblastomas include deletions of 1p (30%) and 11q (45%) and an unbalanced gain of 17q (60%). Amplification of ALK is observed in 1 to 2% of cases of neuroblastomas and ALK is often co-amplified with MYCN.

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Research Concepts:

Raccoon Sign




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Question 512: A 6-month-old previously healthy female is being evaluated. The mother describes an episode where she put the infant to bed following being breastfed. She went to check on the infant about an hour later to find the infant arching her back while making choking sounds. The infant appeared to conscious, but the episode did not resolve until she had violent spit up and started to cry. The patient was consolable. She is afebrile, 95% percentile for weight and developmentally appropriate. What treatment is most appropriate?

Choices:

1. Oral omeprazole
2. Oral levetiracetam
3. Reassurance
4. Consult gastroenterology

Moh'd Terbi

Answer: 3 - Reassurance

Explanations:

- The patient had an episode of spit up due to gastroesophageal reflux. This can be physiologic in infants up to the age of 9 months.
- Unless the patient is showing signs of failure to thrive, formula intolerance, or developmental delay, no medications need to be started.
- If there are concerning symptoms, first-line therapy is to start a proton-pump inhibitor such as omeprazole and possible a gastroenterology consult for further workup for other etiologies.
- The patient does not have any evidence of seizure-like activity; therefore, it is not necessary to start an anti-epileptic drug such as levetiracetam or a neurology consult.

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Research Concepts:

Gastroesophageal Reflux Disease




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Question 513: A 16-year-old wheelchair-bound left handed female is brought to the hospital by her father with a history of high fever, severe cough, lethargy and mental confusion for the last five days. She was under treatment with oral amoxicillin for fever and cough. She has a history of static encephalopathy with a double spastic hemiparesis that is worse on the right side than the left. All these neurological problems started, followed by an episode of meningitis in her childhood. She has been on oral valproic acid therapy from her childhood. A comprehensive metabolic profile is within normal limits. The only significant finding is a highly elevated blood ammonia and serum valproic acid. Which of the following is the most likely diagnosis?

Choices:

1. Chronic liver disease
2. Urinary tract infection with stasis of urine in the bladder
3. Valproic acid-induced hyperammonemia
4. Short bowel syndrome

Mehdi Terbi

Answer: 3 - Valproic acid-induced hyperammonemia

Explanations:

- The most likely diagnosis is valproic acid (VPA)-induced hyperammonemia. Several studies have shown a link between valproic acid therapy and hyperammonemia. Valproic acid overdose or long term valproic acid can cause hyperammonemia by three mechanisms.
- Firstly, 4-en-VPA is a metabolite of valproic acid which indirectly inhibits fatty acid oxidation process which results in the reduction of free coenzyme A (CoA) and acetyl CoA. Low level of acetyl CoA inhibits mitochondrial production of N-acetyl-glutamate (NAG) synthetase. This NAG synthetase is required for activation of carbamoyl phosphate synthetase I, the first enzyme in the urea cycle, and thereby leads to an accumulation of ammonia in the blood.
- Secondly, intramitochondrial beta-oxidation of long chain fatty acids is inhibited by valproic acid leading to activation of the cytosolic oxidation pathway and increased utilization of free CoA, acetyl CoA synthase, and acetyl CoA by this pathway that makes these substances less available for use in the urea cycle.
- Thirdly, valproic acid causes a deficit in free carnitine leads to the reduction of mitochondrial transmembrane transportation of long chain fatty acids and thus, a less active second pathway for acetyl CoA synthesis in supplying adequate levels of acetyl CoA required by the urea cycle.

Mohit Tehri

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Research Concepts:

Biochemistry, Ammonia

StatPearls Knowledge Base

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Moh'd Terbi

Question 514: A 16-year-old male presents with fevers and altered mental status. The patient's family mentions to you that he had recently been enjoying time bathing in some hot springs in Colorado. The vital signs are BP of 110/70 mmHg, a pulse of 90/minute, respiratory rate of 16/minute, and temperature of 101F (38.3C). Clinical examination shows altered mental status and features of meningism. The patient is started on a therapeutic regimen of ceftriaxone, vancomycin, and acyclovir but there is no resolution of symptoms. MRI shows cortical hemorrhages in the cerebellum. A lumbar puncture is performed. What are the expected findings in CSF studies in this patient?

Choices:

1. Opening pressure 30 cmH20, glucose 72 mg/dL, protein 260 mg/dL, and WBC count 465 cells/mm3, 82% leukocytes
2. Opening pressure 30 cmH20, glucose 31 mg/dL, protein 185 mg/dL, and WBC count 457 cells/mm3, 38% leukocytes
3. Opening pressure 16 cmH20, glucose 36 mg/dL, protein 98 mg/dL, and WBC count 400 cells/mm3, 33% leukocytes
4. Opening pressure 40 cmH20, glucose 28 mg/dL, protein 190 mg/dL, and WBC count 510 cells/mm3, 74% leukocytes

Mohit Tekri

Answer: 4 - Opening pressure 40 cmH20, glucose 28 mg/dL, protein 190 mg/dL, and WBC count 510 cells/mm3, 74% leukocytes

Explanations:

- Primary amebic meningoencephalitis (PAM) presents like bacterial meningitis. A history of fresh, warm water exposure should raise suspicion for PAM.
- Cerebrospinal fluid analysis results are similar in both bacterial meningitis and PAM with low glucose, high protein, leukocyte predominance of WBCs. Opening pressures tend to be extremely high in PAM.
- Naegleria fowleri can be missed on gram staining. Visualization of N. fowleri can be achieved by preparing wet mounts or by using hematoxylin and eosin (H&E), periodic acid Schiff (PAS), Giemsa-Wright staining, or modified trichome.
- PAM is treated with a combination of amphotericin B, azole antifungals, rifampin, and, more recently, miltefosine.

Moh'd Terbi

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Research Concepts:

Naegleria




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Question 515: A 17-year-old, previously healthy, female presents with an acute flu-like illness, fever, myalgias, shortness of breath, and chest pain. Her ECG shows sinus tachycardia. Her labs show elevated white blood cells and an abnormally elevated troponin. Her chest x-ray shows mild pulmonary edema with findings consistent with congestive heart failure. What is her likely diagnosis?

Choices:

1. Hypertrophic obstructive cardiomyopathy
2. Brugada syndrome
3. Acute myocarditis
4. Prolonged QT

Moh'd Terbi

Answer: 3 - Acute myocarditis

Explanations:

- Hypertrophic obstructive cardiomyopathy is an inherited, usually autosomal dominant, cardiac disorder that may lead to sudden death, typically in young people. The chief abnormality found is left ventricular hypertrophy with asymmetrical thickening of the anterior interventricular septum. Classically, patients will present with exertional syncope caused by acute left ventricular outlet obstruction and ventricular dysrhythmias with the potential for sudden death.
- Brugada syndrome is a well-known cause of sudden death secondary to a genetic mutation in cardiac sodium channels. Also known as a sodium channelopathy, over 60 mutations have been described. Classic ECG findings include the "Brugada sign" in type 1 Brugada syndrome with a coved ST-segment elevation greater than 2 mm in more than one of V1-V3 followed by a negative T wave. Other types have been described as well. This abnormal sodium channel with corresponding ECG findings can lead to sudden death. It presents as ventricular dysrhythmias such as ventricular fibrillation and ventricular tachycardias.
- Myocarditis, by definition, is an inflammatory process of the myocardium that is caused mostly by viruses. Patients typically will present with a flu-like illness, with symptoms including fever, malaise, myalgias, vomiting, and even diarrhea. Adults typically will present with dyspnea, chest pain, and arrhythmias. Vital signs typically are abnormal, including fever, tachycardia, tachypnea, and sometimes hypotension. No single sign or symptom is specific to make the diagnosis, but a presentation with chest pain or congestive heart failure often indicates a poor prognosis.
- The QT interval is measured from the beginning of the Q wave to the end of the T wave. The corrected QT or QTc interval is considered long if greater than 440 milliseconds in men and 460

Mona Tehrani

milliseconds in women. Any QTc greater than 500 milliseconds poses a significantly increased risk for torsades de pointes. Causes of prolonged QT include hypokalemia, hypomagnesemia, hypocalcemia, certain drugs, and congenital prolonged QT syndrome. Patients often are asymptomatic but also may present with syncope or ventricular dysrhythmias such as torsades de pointes.

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Research Concepts:

Viral Myocarditis



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Question 516: A 17-year-old male diagnosed with cutaneous larva migrans has been observed for the last month. The patient states the itching is bearable, not interfering with sleep, but he has noticed that the lesion has a new honey-colored crust that that has developed over the last week. He also states similar lesions have appeared at other sites. He denies any fever or constitutional symptoms. What is the most likely complication?

Choices:

1. Staphylococcal scalded skin syndrome
2. Secondary impetiginization
3. Allergic reaction to Ancylostoma caninum
4. Natural progression of resolving hookworm infestation

Moh'd Terbi

Answer: 2 - Secondary impetiginization

Explanations:

- Secondary complications of cutaneous larva migrans include bacterial superinfection most commonly by Staphylococcus aureus and streptococcal species. This can present as superficial impetigo and its classic “honey-colored crust.”
- Complications of hookworm infection include secondary bacterial infections, allergic response, and even post bacterial complications including post-streptococcal glomerulonephritis.
- Cutaneous larva migrans is often a self-limited disease and does not always require therapy. The decision to treat with topical or systemic medications is based on disease burden, symptom severity, and treating secondary complications that arise.
- The majority of patient with cutaneous larva migrans resolve without treatment however relapse has been shown to recur in the absence of re-exposure. Longer courses of albendazole therapy have been shown to decrease recurrence.

Mohsen Terbi

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Research Concepts:

Cutaneous Larva Migrans




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Question 517: A patient was bitten by his dog. The dog had recently fended off an attack by a wild wolf. He presents to the emergency department with a grimaced facial expression, generalized muscle spasms associated with severe pain, drooling, uncontrolled urination and defecation, and back arching spasm. He has moderate respiratory distress. What is the best approach to making the diagnosis?

Choices:

1. Clinical history and physical
2. Wound culture
3. Immunofluorescent staining
4. Tetanospasmin immunoassay

Moh'd Terbi

Answer: 1 - Clinical history and physical

Explanations:

- Tetanus is an infection that is characterized by muscle spasms, also known as lockjaw or trismus. The disease most commonly occurs in those who are not vaccinated or in the elderly with waning immunity. Currently, vaccination campaigns have decreased the incidence and prevalence of tetanus worldwide. The spasms from tetanus may last for minutes or may occur up to 4 weeks, with spasms starting in the face and then descending to the rest of the body. Symptoms are caused by toxins produced by the bacterium, Clostridium tetani. There are four main types of tetanus: generalized, neonatal, local, and cerebral tetanus, based on clinical features. Tetanus, a clinical diagnosis, has no particular laboratory test to confirm the diagnosis. Treatment includes tetanus immunoglobulin, antibiotic therapy, neuromuscular blockade, and supportive care for respiratory complications, autonomic instability, and muscle spasms. Full tetanus immunization is required after recovery from the disease. Long-term sequelae have been reported from survivors.
- The clinical features of tetanus include lockjaw, grimace facial expression (risus sardonicus), generalized muscle spasms associated with severe pains, drooling, uncontrolled urination and defecation, and back arching spasm (opisthotonus) that may cause respiratory distress. Most commonly, trismus appears as the first symptom, with the progression of spasms throughout the rest of the body. Spasms can last a few minutes each time and frequently occur for the following weeks. There are four forms of tetanus based on clinical findings: generalized, neonatal, local, and cephalic tetanus. Generalized tetanus is the most common form of tetanus, occurring in approximately 80% of cases. Patients present with a descending pattern of muscle spasms, first presenting with lockjaw, risus sardonicus. This can progress to a stiff neck, difficulty swallowing, and rigid pectoral and calf

Mohit Tariq

muscles. These spasms can occur for up to 4 weeks, with full recovery taking months. Autonomic instability can also occur in these patients with fever, dysrhythmia, labile blood pressure and heart rate, respiratory difficulties, catecholamine excretion, and even early death. Neonatal tetanus is a generalized form of tetanus in newborns of unimmunized mothers or from infection through a contaminated instrument when cutting the umbilical cord. Infants of immunized mothers generally do not get tetanus due to passive immunity from the mother. For those who are infected, there have been case reports of long-term consequences in survivors of neurodevelopmental impairments, behavioral problems, and deficits in gross motor and speech and language development. Local tetanus and cephalic tetanus are the rarest forms of tetanus. Local tetanus is the persistent contraction of muscles at the site of injury that can persist for weeks. This type is uncommonly fatal, however, can progress to the generalized form of tetanus, which is more fatal. Cephalic or cerebral tetanus is limited to the muscles and nerves of the head. Cephalic tetanus occurs most commonly after head trauma such as a skull fracture, head laceration, eye injury, dental procedures, otitis media, or from another injury site. It presents with neck stiffness, dysphagia, trismus, retracted eyelids, deviated gaze, and risus sardonicus. The facial nerve is most frequently involved. However other cranial nerves can also be affected. These findings can lead to further complications such as broncho-aspiration, paralysis of respiratory and laryngeal muscles, and respiratory failure. This type can also progress to generalized tetanus.

Mohd Zeribi

- The diagnosis of tetanus is clinical with no particular laboratory test. Clinicians may find a positive wound culture and the isolation of the organism, however, this occurs in only 30% of cases. Key features to note when diagnosing tetanus include acute onset, muscle contractures with generalized spasms with no other medical cause. Some patients can elicit a history of injury, but not all. There have been reports of the “spatula test” that shows high specificity and sensitivity for the clinical

diagnosis of tetanus. This involves using a soft-tipped instrument to touch the posterior pharyngeal wall. If this elicits an involuntary jaw contraction instead of the normal gag reflex, this suggests a positive test. It is important to note that infections occur in people with no immunity or low-serum levels of anti-tetanus antibodies. However, it is not possible to exclude a tetanus infection with protective levels of antibodies. Life-threatening complications from tetanus can occur and include pneumonia secondary to aspiration and laryngospasm, rhabdomyolysis, upper gastrointestinal bleed, cardiovascular instability such as transient cardiac arrest, tachycardia, or bradycardia, arrhythmias, and hypertension, acute renal failure, and secondary wound infections. Mortality from the infection occurs from respiratory failure and cardiovascular collapse, associated with autonomic dysfunction.

- The tetanus vaccination has been considered as a routine vaccine in addition to pneumococci and influenza vaccines among older adults. Protection against tetanus by vaccines is essential because there is no natural immunity against tetanus. The tetanospasmin toxin is very lethal and will cause death before initiating an immune response. After recovery from an infection, patients must receive full immunity. In addition, post-exposure prophylaxis can also be provided through tetanus toxoid with or without tetanus immunoglobulin intravenous or intramuscular, depending on the wound.

Mohd Tersi

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Research Concepts:

Tetanus



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Moh'd Terbi

Question 518: A 17-year-old man presents with a three-day history of knee pain with swelling. He reports that he was playing a game of pickup basketball when he came down after jumping for a rebound at the same time as another player tripped and fell on the back of his calf. He remembers hearing a "pop" and was unable to play the remainder of the game due to pain from the injury. Today, he has been able to put some weight on the knee, but is concerned because it feels like his knee is "going to buckle." What physical exam maneuver can be done to evaluate for a meniscal tear?

Choices:

1. McMurray test
2. Lachman test
3. Anterior drawer test
4. Posterior drawer test

Moh'd Terbi

Answer: 1 - McMurray test

Explanations:

- The McMurray test is used to determine the presence of a meniscal tear in the knee.
- The McMurray test is performed with the patient supine and the examiner holding the knee and the foot.
- The lateral meniscus is tested by applying a varus stress to the knee while the other hand rotates the leg internally and extends the knee. The medial meniscus is tested by applying valgus stress to the knee while the other hand rotates the leg externally and extends the knee.
- Pain or an audible click while performing the McMurray test can indicate a torn meniscus.

Mohd Terbi

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Research Concepts:

Knee Meniscal Tears




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Question 519: A previously healthy 17-year-old boy presents to the emergency department with a high-grade fever, malaise, neck rigidity, and a petechial skin rash. He reveals that he had developed an upper respiratory tract infection three days ago. Today, in the emergency department, he has a blood pressure of 70/40 mmHg, a heart rate of 120 beats per minute. Further evaluation with labs show a white blood cell count of 22,000 per microliter, sodium 120 mEq/L, potassium 5.8 mEq/L, chloride 89 mEq/L, blood urea nitrogen 34 mg/dL, creatinine 2.0 mg/dL, and glucose 50 mg/dL. Which of the following is most likely to be associated with his condition?

Choices:

1. Disseminated intravascular coagulation
2. Isolated thrombocytopenia
3. Respiratory acidosis
4. Metabolic alkalosis

Moh'd Terbi

Answer: 1 - Disseminated intravascular coagulation

Explanations:

- The patient has hypotension with hyperkalemia, hyponatremia, and hypochloremia. These laboratory abnormalities and petechial skin rash suggest that he has Waterhouse-Friderichsen syndrome (WFS).
- The syndrome is caused by meningococcus. Disseminated intravascular coagulation is a complication associated with meningococcemia.
- Other conditions associated with meningococcemia petechial rash, neurologic manifestations, and pupura fulminans.
- Metabolic acidosis due to adrenal insufficiency is seen on arterial blood gas analysis.

Mohd Terbi

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Research Concepts:

Waterhouse-Friderichsen Syndrome




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Question 520: A 38-year-old female patient presents with a complaint of abdominal weight gain and weakness in the shoulders and hip girdle. She denies the use of any corticosteroid therapies. Nighttime salivary cortisol and low-dose dexamethasone suppression test are positive and serum adrenocorticotropic hormone (ACTH) is elevated. A high-dose dexamethasone suppression test fails to suppress ACTH level. What is the next best step?

Choices:

1. Adrenal vein sampling
2. Evaluate for a primary malignancy producing ectopic ACTH
3. Head computed tomography scan
4. Corticotropin-releasing hormone (CRH) stimulation test

Moh'd Terbi

Answer: 2 - Evaluate for a primary malignancy producing ectopic ACTH

Explanations:

- The next best step is to search for primary malignancy. Secondary hypercortisolism via ectopic ACTH production may be observed in paraneoplastic Cushing syndrome in small cell lung cancer, renal cell carcinoma, and carcinoid syndrome.
- Ectopic ACTH secreting foci such as in paraneoplastic syndromes are resistant to negative feedback provided by the high-dose dexamethasone suppression test, and cortisol level remains elevated.
- The high-dose dexamethasone suppression test should suppress ACTH secretion in cases when low doses of dexamethasone fail to suppress it. If the cortisol level decreases after a high-dose dexamethasone suppression test, head imaging studies should be done to evaluate for pituitary adenoma (Cushing disease).
- If ACTH levels were low with positive nighttime salivary cortisol and low-dose dexamethasone suppression test, suspect adrenal overproduction of cortisol. evaluation.

Wahid Terbi

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Research Concepts:

Cushing Disease



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Moh'd Terbi

Question 521: A 17-year-old female is seen for a worsening sore throat. An exam reveals significant dental decay, erythema of her posterior pharynx without exudates, and no fever. The patient is underweight for her height. There are callouses on the back of her hand over the metacarpal and the phalangeal joints of the first two fingers. She reports she has not had a menstrual period for 4 months, which is unusual for her. A urine pregnancy test is negative. What is the next step in evaluation?

Choices:

1. Perform a rapid strep teat
2. Obtain a more detailed medical history
3. Order bloodwork, including follicle stimulating hormone, luteinizing hormone, and thyroid stimulating hormone levels
4. Provide symptomatic treatment options for a viral infection

Moh'd Terbi

Answer: 2 - Obtain a more detailed medical history

Explanations:

- The patient has several signs of bulimia nervosa, including scars on her hand from induced vomiting and dental decay. She also has secondary amenorrhea.
- Obtaining a more detailed medical history would be the next step in the evaluation of this patient.
- She should be asked about recurrent episodes of binge eating. Binge eating is characterized by eating more than the average person in a 2-hour period. Those who binge eat also will describe a sense of loss of control.
- She should be asked about how she perceives her body image. She also should be asked if she avoids weight gain by fasting, laxative use, diuretic use, or excessive exercise.

Mohud Terbi

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Research Concepts:

Bulimia Nervosa




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Question 522: A 7-year-old female has developed progressive neuropathy, fatty stools, diarrhea, and failure to thrive. A neurologic exam reveals absent deep tendon reflexes and impaired proprioception and vibratory sensation. She has a spastic gait and ataxia. Pigmentary retinal degeneration is seen, and she has diminished night vision. The lipid profile is markedly abnormal with cholesterol of 37 mg/dL, triglycerides are 0 mg/dL, and HDL is 23 mg/dL. Which one of the following changes on a peripheral smear is likely to be observed in this patient?

Choices:

1. Acanthocytes
2. Howell-Jolly bodies
3. Siderotic granules
4. Pappenheimer bodies

Moh'd Terbi

Answer: 1 - Acanthocytes

Explanations:

- The patient has abetalipoproteinemia, a rare autosomal recessive disorder.
- Malabsorption, spinocerebellar dysfunction, retinopathy that causes impaired night and color vision, and acanthocytosis all are characteristic findings.
- There is an absence of apoB-containing lipoproteins such as chylomicrons, very low density lipoproteins, and low density lipoproteins.
- Howell-Jolly bodies, siderotic granules, and Pappenheimer bodies are found in hyposplenism.

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Moh'd Terbi

Research Concepts:

Abetalipoproteinemia




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Question 523: An 18-year-old college student has been fully vaccinated with meningococcal C conjugate vaccine and meningococcal B vaccine. He sleeps in a dormitory and has a roommate who has been diagnosed with invasive meningococcal infections four days ago. The patient presents for meningococcal prophylaxis. What should be recommended?

Choices:

1. He is vaccinated against meningococci, so he does not need any meningococcal chemoprophylaxis
2. After 4 days from close contact with the invasive meningococcal disease, it is too late to administer any chemoprophylaxis
3. As meningococcal chemoprophylaxis, he should receive 4 doses of oral rifampicin or 1 dose of oral ciprofloxacin
4. He should have a nasopharyngeal culture and receive meningococcal chemoprophylaxis if the culture is positive

Med'd Terbi

Answer: 3 - As meningococcal chemoprophylaxis, he should receive 4 doses of oral rifampicin or 1 dose of oral ciprofloxacin

Explanations:

- A close contact with a patient with invasive meningococcal disease (IMD) within seven days before the disease onset should receive meningococcal prophylaxis regardless of vaccination status.
- In cases of a delayed report of IMD, the realization of chemoprophylaxis is reasonable up to 14 days from the date of the disease onset.
- The decision about meningococcal chemoprophylaxis implementation should not be based on nasopharyngeal culture.
- Antibiotics effective in eliminating the carriage of N. meningitidis, therefore recommended in chemoprophylaxis of IMD are oral rifampicin, oral ciprofloxacin, and intramuscular ceftriaxone.

Moh'd Terbi

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Research Concepts:

Meningococcal Prophylaxis




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Question 524: A 4-year-old female has had a 2-week history of diarrhea despite appropriate dietary management and antidiarrheal medication. The stool is pale and watery. The patient has had no fever or blood in her stool. Microscopic examination of the stool provides the diagnosis. What is the most probable cause?

Choices:

1. Salmonella
2. Shigella
3. Giardia lamblia
4. Toxoplasma gondii

Moh'd Terbi

Answer: 3 - Giardia lamblia

Explanations:

- Giardia lamblia is the only pathogen that would cause watery, pale diarrhea out of the four options. Salmonella and Shigella usually cause inflammatory diarrhea and toxoplasma does not cause diarrhea.
- G. lamblia infection may become chronic and last 2 weeks or more. It does not present with fever or bloody stool. Shigella and salmonella follow shorter courses and symptoms of fever and blood in the stool may be present.
- Pathogens that can cause diarrhea and are diagnosed by microscopic examination of stool include G. lamblia, Cryptosporidium species, amoebas, and Trichuris trichiura (whipworm). Microscopic examination of the stool would show only leukocytes in shigellosis or salmonella infection.
- First line treatment for giardiasis is metronidazole or tinidazole. Anti-diarrheal medication likely would not resolve symptoms fully, as in this case.

Ulchi'a Terbi

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Research Concepts:

Giardia Lamblia Enteritis




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Question 525: A 17-year-old patient from Northern Thailand presents to your clinic with a history of dysuria and foul-smelling urine. A urinalysis suggests a urinary tract infection, so trimethoprim/sulfamethoxazole is prescribed for 3 days. Two days later she presents with yellowing of her eyes and a distended abdomen. She has a known history of anemia with baseline hemoglobin of 10 g/dL. What would one expect to see on her peripheral blood film?

Choices:

1. Normal morphology
2. Hypochromia and microcytosis with inclusion bodies
3. Macrocytosis
4. Spherocytes

Moh'd Terbi

Answer: 2 - Hypochromia and microcytosis with inclusion bodies

Explanations:

- This patient likely has hemoglobin H (HbH) disease. Hemoglobin Constant Spring (HbCS) is the most common form of non-deletion alpha thalassemia. One to 2% of individuals living in Northern Thailand has HbH disease.
- The peripheral blood film in HbH disease will show hypochromia and microcytosis with inclusion bodies. Inclusion bodies are seen only with a supravital dye such as methyl violet or brilliant cresyl blue.
- Patients with HbH disease will have fluctuating degrees of anemia. The anemia is due to a combination of ineffective erythropoiesis and hemolysis. Periods of increased oxidative stress tend to increase the rate of hemolysis. Examples are sepsis and medications. Patients then have the typical presentation of hemolytic anemia, such as elevated lactate dehydrogenase (LDH), decreased haptoglobin, splenomegaly, hepatomegaly, and jaundice.
- The bone marrow will demonstrate erythroid hyperplasia with poorly hemoglobinized erythroblasts carrying inclusion bodies.

Wafa Terbi

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Research Concepts:

Alpha Thalassemia



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Moh'd Terbi

Question 526: After a long day of diving in Nicaragua, a 17-year-old male notices pain in his right calf. He remembers briefly feeling a sharp pain in the area while he was underwater, but did not pay much attention to it at the time. He visits the local emergency department several hours after symptom onset. He is nauseated and has diffuse myalgias. His right calf has a 10 cm x 8 cm area of erythema, swelling, and warmth with a bluish hue. His vital signs are temperature 37.9 C, heart rate 110 beats per minute, blood pressure 120/70 mmHg, respiratory rate 18 breaths per minute, and pulse oximetry of 99% on room air. What is the most likely explanation for his symptoms?

Choices:

1. Cellulitis
2. Sea urchin spine envenomation
3. Jellyfish sting
4. Vibrio fischerii infection of abrasion

Moh'a Terbi

Answer: 2 - Sea urchin spine envenomation

Explanations:

- Inflammation of skin and soft tissue following an Echinoderm sting may resemble cellulitis. A history of stepping on a spine and immediate pain following the event will provide a clue to the diagnosis.
- The patient will describe an immediate, incapacitating burning pain that is localized to the puncture wound. This may last several hours and is exacerbated by pressure on the wound. There may be systemic symptoms such as nausea and vomiting, paresthesias, weakness, abdominal pain, syncope, hypotension, and respiratory distress. On physical exam, there may be bleeding, edema, erythema, and warmth at and surrounding the puncture site. A spine may or may not be visualized. In some instances, there may exist dark blue or black pigmentation in surrounding tissues from dark-colored spines.
- Echinoderm stings can cause systemic symptoms that can mimic anaphylaxis. On initial presentation, if an unstable patient is unable to provide a history, treatment is supportive.
- If the patient presents several days after the inciting event with a more progressive infection, it can resemble the pustular appearance of contact dermatitis. Any injury can be superinfected with bacteria, leading to cellulitis. This will present several days after the initial injury, and Vibrio species are particularly worrisome causative organisms in injuries sustained in an aquatic environment.

Mohit Tariq

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Research Concepts:

Sea Urchin Toxicity




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Moh'd Terbi

Question 527: A 16-hour-old female presents with sudden respiratory distress and grunting. Upon examination, she has a broad nasal bridge, long face, narrow palpebral fissures, and micrognathia. The first heart sound is normal; the second heart sound is single. A grade 3 systolic ejection murmur is present at the base, There is a mid-diastolic rumble of flow-related mitral. DiGeorge syndrome is suspected. What's the best next step in management?

Choices:

1. Start indomethacin
2. Start oxygen therapy
3. Electrocardiogram, chest radiography, and echocardiogram
4. CBC, blood culture, and start antibiotics

Moh'd Terbi

Answer: 3 - Electrocardiogram, chest radiography, and echocardiogram

Explanations:

- This patient has DiGeorge syndrome, and these patients are at increased risk of congenital heart disease.
- When the diagnosis is suspected, it is imperative as initial work up to perform chest radiograph, electrocardiogram, and echocardiogram. The chest radiograph will show cardiomegaly and increased pulmonary markings. The electrocardiogram normally has nonspecific findings which include biventricular hypertrophy or right ventricular predominance. The echocardiogram will define the site of the disruption.
- Other imaging modalities used for the diagnosis of this entity are cardiac angiography, computed tomography (CT) angiography of the chest and, Magnetic resonance angiography there are used to obtain more comprehensive anatomy of the lesions before surgical repair.
- All patients with a suspected diagnosis of DiGeorge syndrome should have a fluorescence in situ hybridization study done to confirm deletion of chromosome 22q11.

Monica Terki

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Research Concepts:

Interrupted Aortic Arch



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Moh'd Terbi

Question 528: A patient with schizophrenia presents with involuntary and repetitive movements of her tongue, face, trunk, and extremities. She admits to complying with her prescribed medication. What is the best treatment?

Choices:

1. Administration of lithium
2. Administration of levodopa
3. Administration of bromocriptine
4. Decrease the dose of neuroleptic

Moh'd Terbi

Answer: 4 - Decrease the dose of neuroleptic

Explanations:

- Tardive dyskinesia is characterized by repetitive, involuntary, purposeless movements and typically results after the use of antipsychotic drugs.
- The best treatment for symptoms of tardive dyskinesia is using the lowest effective dose of a neuroleptic for the shortest time.
- Valbenazine is a vesicular monoamine transporter 2 (VMAT2) inhibitor that is used to treat tardive dyskinesia in adults.
- Clozapine is the best medication for patients who require antipsychotics and have simultaneous tardive dyskinesia.

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Moh'd Terbi

Research Concepts:

Tardive Dyskinesia




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Question 529: An 11-year-old male is brought to the emergency department after a motor vehicle hit him. His vital signs show a temperature of 37.5 C, blood pressure of 115/75 mmHg, pulse of 62 beats/min, and respiratory rate of 17 breaths/min. He is awake and alert and complains of a headache and blurry vision. He denies any other pain, nausea, vomiting, or difficulty breathing. There is a boggy, tender area over his left temporal area with no other signs of trauma. His pupils are 3 mm, equal, and reactive. When he looks straight ahead, his left eye deviates medially. Eye movements and cranial nerves are otherwise intact. The mental status examination and the rest of the neurologic examination are unremarkable. Computed tomography of the head confirms an epidural hematoma. Which of the following is the most appropriate initial step in management?

Choices:

Mehdi Terbi

1. Intubation and mechanical ventilation
2. Magnetic resonance imaging of the brain
3. Ophthalmology consultation
4. Neurosurgery consultation

Answer: 4 - Neurosurgery consultation

Explanations:

- This patient had a severe head injury. Due to the abnormal eye deviation and imaging, which shows an epidural hematoma, the best initial course of action is to obtain a neurosurgical consult in preparation for immediate surgery.
- The most common cause of epidural hematoma is blunt trauma, and the most frequent source of bleeding is arterial.
- An epidural hematoma can lead to increased intracranial pressure, herniation syndrome, and death; therefore, prompt surgical intervention is crucial in these patients.
- Only 20% of patients with epidural hematoma may experience the classic initial loss of consciousness, which helps to distinguish epidural hematoma from other types of intracranial hemorrhage.

Moh'd Terbi

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Research Concepts:

Waddell Triad




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Question 530: An 18-month old male is seen in the clinic.

Examination reveals a large hemangioma on the entire trunk, which had been gradually spreading over the past 2 months and rapidly became large, tense, and painful over the past few days. Blood work reveals that he also has severe thrombocytopenia. He does not have a fever, chills, or weight loss. He is not on any medications. What is the most likely diagnosis?

Choices:

1. Peutz-Jeghers syndrome
2. Kasabach-Merritt syndrome
3. Ataxia telangiectasias
4. Klippel-Trenaunay syndrome

Moh'd Terbi

Answer: 2 - Kasabach-Merritt syndrome

Explanations:

- Kasabach and Merritt reported a male infant with a raised discolored lesion on the thigh that grew to involve the whole leg, abdomen, scrotum, and thorax.
- This was accompanied by consumptive thrombocytopenia. The disorder is secondary to Kaposi hemangioendothelioma and results in thrombocytopenia.
- There is platelet trapping, intravascular coagulation, and coagulation factor consumption.
- In the vascular lesion, platelets are activated causing vascular tissue growth.

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Moh'd Terbi

Research Concepts:

Kasabach Merritt Syndrome




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Question 531: A 17-year-old white male, with no significant past medical history, presents to his primary care provider's clinic. On physical examination, he has a regular heart rate of 143 bpm; blood pressure is 132/90 mmHg, respiratory rate of 18/minute, and temperature of 98.3 F. After careful examination of his electrocardiogram, it is determined that his rhythm is consistent with sinoatrial nodal reentrant tachycardia. What is the exact mechanism of SANRT?

Choices:

1. A reentry circuit which is within the sinoatrial node or the sinoatrial node and it's perinodal tissues
2. A diseased sinoatrial node
3. Fast and slow circuits within the atrioventricular node
4. Diseased sinoatrial and atrioventricular node

Moh'd Terbi

Answer: 1 - A reentry circuit which is within the sinoatrial node or the sinoatrial node and it's perinodal tissues

Explanations:

- Most evidence suggests that the SANRT reentry circuit usually involves either just the sinoatrial node or both the sinoatrial node and the perinodal tissue.
- A diseased sinoatrial node mostly likely result in sinus bradycardia.
- Fast and slow circuits within the atrioventricular node are most commonly involved in atrioventricular nodal reentrant tachycardia.
- Diseased sinoatrial and atrioventricular node are commonly lead to junctional escape beats.

Mahdi Terbi

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Research Concepts:

Sinoatrial Nodal Reentrant Tachycardia




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Question 532: A mother presents to the clinic with her 10-year-old boy during winter vacation from school. Her son had previously been seen for the treatment of actinic prurigo. The patient is currently lesion free, and his mother is wondering what conservative treatments or preventive measures could be taken to help prevent another similar outbreak of actinic prurigo?

Choices:

1. Application of a thick layer of fragrance-free moisturizer, preferably ointments, to the surface of the affected skin, especially after bathing
2. Avoidance of environmental triggers especially dusts, molds, insects, and pet dander
3. Wearing appropriate protective clothing when exposed to cool temperatures and avoiding reaching for iced or cold refrigerated items with bare hands
4. Sun avoidance during the spring and summer months using sun protective clothing and broad-spectrum sunscreen

Mona Terbi

Answer: 4 - Sun avoidance during the spring and summer months using sun protective clothing and broad-spectrum sunscreen

Explanations:

- Patients with actinic prurigo will typically present in early spring as sunlight becomes more prevalent, and individuals spend more time exposing their skin to sunlight outdoors.
- Actinic prurigo (AP) is a rare form of an idiopathic photodermatosis that primarily affects sun-exposed areas of the skin. The affected regions of the skin typically include the face, neck, and dorsal surface of the upper extremities.
- Minor cases of actinic prurigo can be treated with sun-avoidance alone. Proper sun protection includes avoiding sunlight by staying indoors or in shaded areas, wearing protective clothing, sunglasses, and wide-brim hats, and using a broad-spectrum sunscreen.
- Actinic prurigo is characterized by itchy, inflamed papules, nodules, and plaques. Lesions appear hours or days after ultraviolet light exposure. The face, neck, arms, hands, and legs are usually affected. It is a chronic disease and may worsen in the spring and summer as the day lengthens and exposure to sunlight increases.

Moh'd Tarifi

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Research Concepts:

Actinic Prurigo



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Moh'd Terbi

Question 533: A 16-month-old has had vomiting and diarrhea for a week. His mother has given him sugar water, rice, and salt. The child is irritable and lethargic, and the muscles feel doughy. What lab value is consistent with this condition?

Choices:

1. Serum glucose 210 mg/dL
2. Serum sodium 162 mEq/L
3. Serum potassium 3 mEq/L
4. Serum chloride 98 mEq/L

Moh'd Terbi

Answer: 2 - Serum sodium 162 mEq/L

Explanations:

- Hypernatremia is consistent with the physical findings and the history would indicate dehydration.
- Severe hyponatremic dehydration (less than 130 mEq/L) or hypernatremic dehydration (greater than 150 mEq/L) is corrected over 24 to 48 hours.
- Rapid correction of hypernatremia may result in cerebral edema as a result of intracellular swelling. This can cause herniation, permanent neurologic deficits, and myelinolysis.
- Osmotic demyelination syndrome, also known as central pontine myelinolysis, can occur as a result of rapid correction of hyponatremia. Symptoms include a headache, confusion, altered consciousness, gait disturbance, and may lead to respiratory arrest.

Moh'd Terbi

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Research Concepts:

Pediatric Dehydration




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Question 534: A 33-week-gestation newborn infant male is born to a 19-year-old mother who has not received prenatal care. The mother admits that she used cocaine during the pregnancy. At birth, the infant has a generalized maculopapular rash, splenomegaly, and a slightly distended abdomen. The infant has anemia with a hemoglobin of 11.0 g/dL. Blood work on the mother showed that she has positive venereal disease research laboratory (VDRL) testing, with no history of any treatment for her likely infection. What is the next best step in the management of this infant?

Choices:

1. Treatment of the infant with benzathine penicillin G 50,000 units/kg/dose IM in a single dose
2. Treat the infant with aqueous crystalline penicillin G 50,000 units/kg/dose intravenously every 12 hours in the first seven days of life. After 7 days of life, 50,000 units/kg/dose IV every 8 hours for 10 to 14 days
3. Treat infant with benzathine penicillin G 50,000 units/kg/dose intravenously every 8 hours for four weeks
4. Treat with oxacillin 25 to 50 mg/kg/day IV/IM in a single daily dose for 7 days. After 7 days of life, continue the same dose IV every 8 hours for 10 to 14 days

Mon'd Terbi

Answer: 2 - Treat the infant with aqueous crystalline penicillin G 50,000 units/kg/dose intravenously every 12 hours in the first seven days of life. After 7 days of life, 50,000 units/kg/dose IV every 8 hours for 10 to 14 days

Explanations:

- The clinical presentation of the infant is consistent with a high clinical concern for syphilis, especially in the setting of the mother having positive VDRL titers and no treatment.
- Infants with a high likelihood of syphilis should be treated with 50,000 units/kg/dose intravenously every 12 hours in the first seven days of life. After 7 days of life, 50,000 units/kg/dose IV every 8 hours for 10 to 14 days. Single-dose treatment will be inappropriate in this setting.
- Treatment of the infant with benzathine penicillin G 50,000 units/kg/dose IM in a single dose is appropriate to treat asymptomatic children with a low likelihood of syphilis who have been exposed to the disease.
- Alternatively, procaine penicillin G, 50,000 units/kg/day intramuscularly for 10 to 14 days can be given.

Wahid Terbih

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Research Concepts:

Congenital Syphilis




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improvement.

Moh'd Terbi

Question 535: A 16-year-old male presents with his mother, who is concerned about "stripes on his back that look like whip marks." She says they have been present for several months. The patient denies a history of eating shiitake mushrooms or pruritis in the area of concern. Given the likely diagnosis, which of the following has been shown to significantly improve the appearance of this patient's condition?

Choices:

1. Topical tretinoin
2. Oral antihistamine
3. Laser treatment
4. Dermabrasion

Moh'd Terbi

Answer: 1 - Topical tretinoin

Explanations:

- Rapid truncal growth in adolescence can occasionally result in multiple striae distensae (stretch marks), which are thought to be induced by stretching of the dermis and possibly related to hormonal factors.
- Although the erythema fades over about a year, white marks persist long term.
- A careful history is important to exclude other reasons for linear lesions, such as shiitake dermatitis due to undercooked shiitake mushrooms, dermographism (short-lasting weals from scratching), and flagellate erythema due to bleomycin when undergoing chemotherapy.
- Early striae can be red and are most responsive to treatment. Topical tretinoin has been shown to significantly improve the appearance of striae distensae.

Aichi Terbi

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Research Concepts:

Stretch Marks




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Question 536: A 2-year-old female baby is brought to the office by her parents. The mother concerns that the baby cannot walk or sit up properly and falls frequently. Her daughter seems to be smaller than other babies at her age. The baby also does not seem to respond to sounds in her surroundings. On examination, hypotonic muscle tone, asymmetric posture and gait, and visual and hearing impairment are observed. Persistent rooting and other reflexes are observed. Which lesion in one location can result in these clinical findings?

Choices:

1. Congenital cerebral injury
2. Congenital CN 5 injury
3. Congenital CN 7 injury
4. Congenital spinal cord injury

Moh'd Terbi



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Answer: 1 - Congenital cerebral injury

Explanations:

- The persistence of the rooting reflex commonly with other primitive reflexes after 4 to 6 months may suggest congenital cerebral palsy.
- The rooting reflex lasts about 4 to 6 months until the frontal lobe develops and suppresses the reflex.
- A baby with cerebral palsy may have difficulty walking and balancing due to abnormal (hypotonic or hypertonic) muscle tone and delayed developmental milestones.
- Patients with cerebral palsy often develop other conditions, such as learning disability, seizures, and visual or hearing impairment.

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Moh'd Terbi

Research Concepts:

Rooting Reflex




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Question 537: A 4-month-old male patient has been brought to the clinic by his mother. She has been noticing greasy yellow spots on his scalp for the past 3 weeks. The mother says that the boy does not seem to be disturbed by the rash. The child was born via spontaneous vaginal delivery with no complications. His physical examination reveals diffuse, greasy, and scaly patches. What is the treatment of choice for this condition?

Choices:

1. Nystatin
2. Ketoconazole
3. Amphotericin B
4. Terbinafine



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Answer: 2 - Ketoconazole

Explanations:

- This infant with greasy, yellow patches on the scalp, most likely has seborrheic dermatitis. Seborrheic dermatitis in infants commonly presents on the scalp, and is known as cradle cap.
- Seborrheic dermatitis is treated with topical antifungal antibiotics, such as a topical ketoconazole.
- Ketoconazole is associated with orthostatic hypotension, thrombocytopenia, pruritis, rash, myalgias, and gastrointestinal distress.
- Other treatment options for seborrheic dermatitis include shampoos with selenium sulfide, pyrithione zinc, or coal tar.

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Moh'd Terbi

Research Concepts:

Antifungal Antibiotics




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Question 538: A 14-month-old male child with a past medical history of eczema presents to the clinician for evaluation of a fever. His mother states he was born full-term via a normal vaginal delivery without complications, was breastfed and is now undergoing a change to formula feeding. He has seasonal allergies but takes no medications. There is no smoking in the home nor a history of intubations. His mother reports that the child has had a fever for the past few days, which has responded to alternating regimens of Ibuprofen and Acetaminophen. The mother also reveals that she has noticed the child tugging his right ear and some right ear discharge. Otherwise, she denies any changes in the child's oral intake, vomiting, diarrhea, cough, or rhinorrhea. On physical examination, the left ear is unremarkable, but the right tympanic membrane is red and bulging with hypomobility on pneumatic otoscope. What is the underlying etiology for this child's ear infection?

Moh'd Terbi

Choices:

1. Ciliary dysfunction
2. Eustachian tube structure
3. Lack of breastfeeding
4. Passive smoke exposure

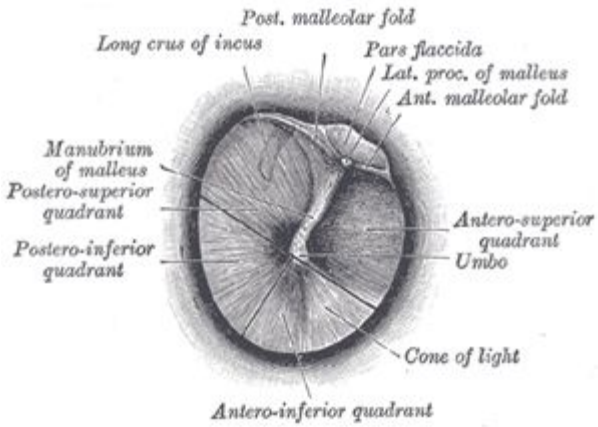


Photo:Contributed by Gray's Anatomy Plates

Answer: 2 - Eustachian tube structure

Explanations:

- In the adult, the Eustachian tube is 45 degrees from the horizontal whereas the infant. The eustachian tube is 10 degrees from the horizontal and is less effective in equalizing the pressure in the middle ear with the nasopharynx.
- The narrow Eustachian tube is more likely to be blocked given an infection causing inflammatory edema and fluid accumulation.
- Acute otitis media often occurs due to the accumulation of fluid behind the tympanic membrane, which houses viral or bacterial pathogens.
- The tympanic membrane displays these changes as bulging from pus accumulation medial to this structure.

Mahdi Terbi

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Research Concepts:

Anatomy, Head and Neck, Ear Tympanic Membrane

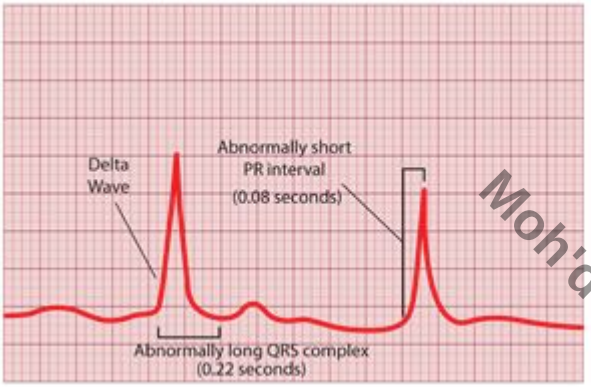



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Question 539: An ECG shows short PR interval, delta waves, and a wide QRS. What symptom most likely is associated with these findings?

Choices:

1. Bradycardia
2. Angina
3. Tachycardia
4. Hypertension



Moh'd Terbi

Photo:Contributed Illustration by Bryan Parker

Answer: 3 - Tachycardia

Explanations:

- Wolff-Parkinson-White (WPW) syndrome patients often suffer from tachyarrhythmias.
- The classic findings are short PR interval, delta waves best seen in I, II and V5, and a wide QRS.
- This is often diagnosed in asymptomatic patients, but it can present an acute onset of a tachyarrhythmia
- The treatment for WPW syndrome is radiofrequency ablation.

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Research Concepts:

Moh'd Terbi

Wolff Parkinson White Syndrome




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Question 540: A 27-year-old female patient with no past medical history presents to the emergency department with left eye pain and decreased perception of light. The exam is also remarkable for poor rapidly alternating movement of the right hand and slurred speech. Both eyes show ocular dysmetria, and tandem gait is very unsteady. On ocular examination, when an attempt is made to gaze contralaterally, the affected eye adducts minimally. The contralateral eye abducts, however, with nystagmus. What is the next step in the management of this patient?

Choices:

1. Dilated fundoscopic examination
2. Magnetic resonance imaging of the brain and orbits
3. Lumbar puncture
4. EEG

Moh'd Terbi

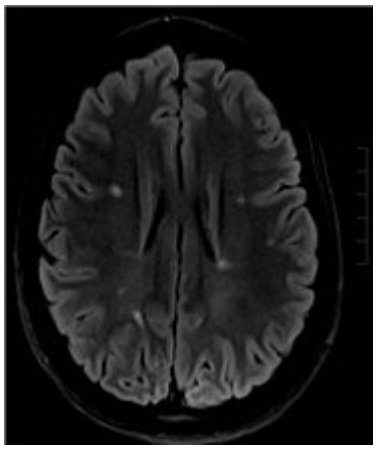


Photo:Contributed by Sunil Munakomi, MD.

Answer: 2 - Magnetic resonance imaging of the brain and orbits

Explanations:

- Optic neuritis is often the presenting symptom of multiple sclerosis. Another common visual complaint is abnormal eye movement, known as internuclear ophthalmoplegia (INO). Patients often complain of diplopia. INO results from a demyelinating lesion of the medial longitudinal fasciculus.
- A contrast-enhanced magnetic resonance imaging (MRI) scan is the most appropriate next step in the management of this patient.
- The presence of typical lesions on an MRI negates the need for lumbar puncture in most cases.
- A lumbar puncture can be obtained if the MRI is equivocal.

Mohd Terbi

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Research Concepts:

Multiple Sclerosis




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Question 541: A patient with AIDS has a purified protein derivative (PPD) skin test placed. Which of the following is a positive test?

Choices:

1. Induration of 3 millimeters or more
2. Erythema of 11 millimeters or more
3. Induration of 5 millimeters or more
4. Erythema of 15 millimeters or more



Photo:Contributed by Gabrielle Benenson, The Centers for Disease Control and Prevention (CDC)

Answer: 3 - Induration of 5 millimeters or more

Explanations:

- Measurement of a purified protein derivative (PPD) skin test should include only induration, not erythema.
- Induration of 5 millimeters or more is positive in a patient with AIDS.
- Induration of 5 millimeters may also be seen in people who have had a recent contact with a person who has an active tuberculosis infection.
- Patients with organ transplants or those who are immunosuppressed will also have a 5 millimeter induration that is considered positive.

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Moh'd Terbi

Research Concepts:

PPD Skin Test

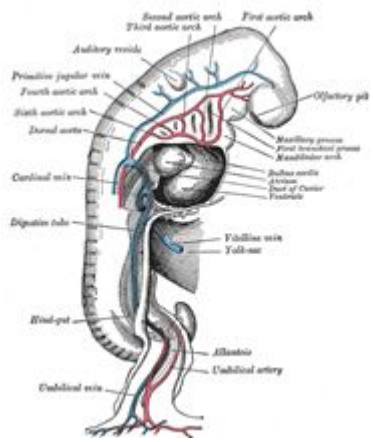



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Question 542: A male infant is precipitously delivered after a placental abruption at 30 weeks gestation. The infant shows clear signs of distress and is taken to the neonatal intensive care unit (NICU) for further monitoring, with umbilical catheters being placed. Which of the following organs is most likely supplied by the remaining patent portion of the umbilical artery?

Choices:

1. Liver
2. Stomach
3. Spleen
4. Bladder



Moh'd Terbi

Photo:Contributed by Gray's Anatomy Plates

Answer: 4 - Bladder

Explanations:

- The pelvic portion of the umbilical artery remains patent and becomes the superior vesical artery. The superior vesical artery supplies the superior portion of the bladder.
- The remainder of the umbilical vessel is converted into the medial umbilical ligament, which extends from the pelvis to the umbilicus.
- The umbilical artery originates from the internal iliac artery and travels within the umbilical cord to the placenta in utero.
- The distal part of the superior vesicle artery converts to the medial umbilical ligament, which courses superiorly along the abdominal wall to the umbilicus.

Mahdi Terbi

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Research Concepts:

Anatomy, Abdomen and Pelvis, Bladder




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Question 543: A 17-year-old male patient presents with complaints of a raw whitish tongue for the past four days. He states that his tongue has a white layer every morning upon awakening. This problem has interfered with his taste sensation and causes him mild pain when he swallows. His past medical history is significant for dental caries and asthma, for which he takes inhaled albuterol and fluticasone regularly. His vital signs are within normal limits. Examination of the abdominal, cardiopulmonary, and neurological systems reveals no significant findings. Examination of the oral cavity is shown in the image. There is no cervical lymphadenopathy present. His human immunodeficiency virus (HIV) titers are negative. What is the next best step in the management of this patient?

Choices:

1. Intravenous fluconazole
2. Caspofungin
3. Miconazole mucoadhesive buccal tablets
4. Oral ketoconazole

Mohsen Terbi



Photo:Contributed by DermNetNZ

Answer: 3 - Miconazole mucoadhesive buccal tablets

Explanations:

- Oropharyngeal candidiasis presents with a white or yellow non-scrapable rash on the tongue and mucous membranes of the mouth, or redness and soreness with cracking at the corners of the mouth.
- It causes pain with swallowing when it extends into the oral pharynx. It is common in infants, the elderly, and patients with a compromised immune system. It is common with the use of steroid inhalers.
- First-line treatment options for HIV seronegative patients with oral candidiasis include clotrimazole troches, miconazole mucoadhesive buccal tablets, and nystatin swish and swallow (400,000 to 600,000 units four times daily).
- In contrast to oral candidiasis, esophageal candidiasis should be treated with systemic antifungals such as fluconazole. Patients should be instructed to rinse their mouth after using inhaled steroids.

Moh'd Terbi

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Research Concepts:

Candidiasis




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Question 544: A 6-year-old male with a long history of trouble with coordination presents to the office. Based on the results of the brain MRI, the pediatrician explains that the patient presents a malformation that is associated with vermian and cerebellar hypoplasia. Which of the following complications is most associated with this malformation?

Choices:

1. Hydrocephalus
2. Facial malformations
3. Seizures
4. Gastrointestinal bleeding

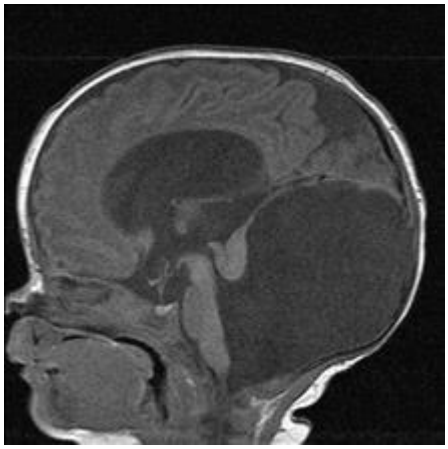


Photo:Contributed by Scott Dulebohn, MD

Moh'd Terbi

Answer: 1 - Hydrocephalus

Explanations:

- Dandy-Walker is comprised of hypoplasia of the cerebellar vermis, dilation of the 4th ventricle, and elevation of the cerebellar tentorium.
- 70-90% of patients with Dandy-Walker malformation present hydrocephalus.
- Dandy-Walker is also associated with malformations of the face, limbs, heart
- DWM may be isolated or associated with chromosomal abnormalities, Mendelian disorders, syndromic malformations, congenital infections, and various other comorbidities.

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Moh'd Terbi

Research Concepts:

Dandy Walker Malformation




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Question 545: A 6-year-old child is brought in with a 4-day history of fever over 39 C, malaise, coryza, cough, and conjunctivitis. An erythematous maculopapular rash has been present for the past 24 hours. There are white spots and the inflamed buccal mucosa. Which of the following is the most likely diagnosis?

Choices:

1. Fifth disease
2. Rubella
3. Rubeola
4. Roseola



Photo:Contributed by DermNetNZ

Answer: 3 - Rubeola

Explanations:

- Rubeola, also known as measles, is an acute viral infection caused by a Morbillivirus of the family Paramyxoviridae. The diagnosis of measles is straightforward when all of the signs and symptoms are present. The patient has classic findings of red measles or rubeola, including Koplik spots.
- The most frequently used laboratory diagnostic method is the serologic response to the virus or polymerase chain reaction (PCR) testing. Complications are most likely in children and immunocompromised patients. Prevention is carried out by the administration of live attenuated vaccines.
- The clinical picture of measles can be divided into three prodromal, eruptive, and convalescent stages and should be suspected in patients with the classic triad of the 3 "Cs": cough, conjunctivitis, and coryza. The fever disappears two or three days after the rash begins, as does the general malaise. Complications can include laryngitis, pneumonia, encephalitis, and myocarditis.
- Treatment is supportive care. This can include antipyretics such as acetaminophen and sometimes vitamin A.

Mohit Tekh

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Research Concepts:

Rubeola (Measles)



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Moh'd Terbi

Question 546: A 4-year-old female presents to the clinic with a new-onset rash. Her mother explains the rash began two days ago on her lower extremities and subsequently spread to her buttocks and face. She was diagnosed with a mild upper respiratory infection two weeks ago. The patient denies any pruritus, and her mother states she has been eating and sleeping well. On physical examination, she has multiple, monomorphic, pink papules on the extensor surfaces of the extremities, buttocks, and face. Vital signs are stable. What is the next best step in management?

Choices:

1. Reassurance
2. Topical corticosteroids
3. Oral diphenhydramine
4. Topical tacrolimus

Moh'd Terbi



Photo:Contributed by DermNetNZ

Answer: 1 - Reassurance

Explanations:

- Gianotti Crosti syndrome, also called papular acrodermatitis of childhood, is characterized by the acute onset of monomorphic, skin-colored to pink-red edematous papules on the extensor surfaces of the extremities, face, and buttocks in a symmetric distribution.
- Gianotti Crosti syndrome has been associated with hepatitis B virus and Epstein-Barr virus. Generally, testing for specific viral infections is only warranted in patients with risk factors for hepatitis B, signs of extracutaneous clinical findings (i.e., hepatosplenomegaly), or immunodeficiencies. Thus, management depends on the clinical presentation.
- Gianotti Crosti syndrome is a self-limited disease with spontaneous resolution in 3-6 weeks.
- If patients are otherwise healthy and experiencing no pruritus or other systemic symptoms, treatment is not necessary. Otherwise, emollients, topical corticosteroids, or oral antihistamines may be used to relieve pruritus.

Michael Terlizzi

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Research Concepts:

Papular Acrodermatitis




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improvement.

Moh'd Terbi

Question 547: A 5-year-old boy has been brought to the hospital with new-onset seizures in sleep. He started making unusual noises in sleep and has copious salivation, right-sided facial twitching, and twitching of right arm following which he became unresponsive. On further questioning, he had a similar event two weeks prior. Routine laboratory investigations, including complete blood count (CBC), electrolytes, calcium, and magnesium, are within normal limits. A head CT scan is normal. He has undergone electroencephalogram (EEG) testing. Which of the following abnormalities will most probably be present in this EEG?

Choices:

1. Generalized 3 Hz spike and wave discharges
2. Generalized polyspikes on eye closure
3. Occipital rhythmic delta activity
4. Bilateral central temporal spikes augmented in early sleep

Med'd Terbi

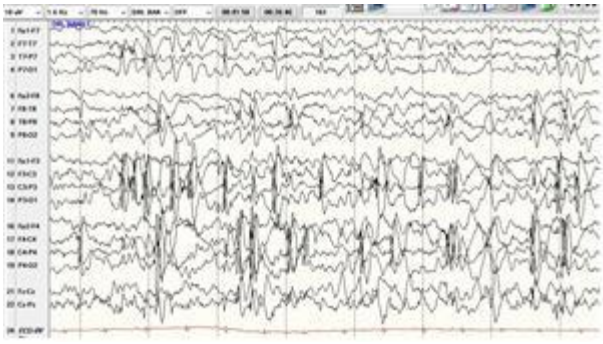


Photo:Contributed by Arayamparambil Anilkumar, MD

Answer: 4 - Bilateral central temporal spikes augmented in early sleep

Explanations:

- The commonest age-related focal epilepsy in childhood is central temporal epilepsy, also known as rolandic epilepsy.
- The seizures often start in sleep, as focal seizures with generalization as the discharges are augmented in sleep.
- Electroencephalogram (EEG) will show central temporal spikes bilaterally, often asynchronously, with a horizontal dipole.
- Even though clinical manifestations are lateralized during the seizure, the EEG findings are most often bilateral.

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Moh'd Terbi

Research Concepts:

EEG Abnormal Waveforms




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Question 548: A 0.5 cm skin nodule on the trunk is excised.

Histology shows a cyst of the dermis filled with keratin. It is lined by stratified squamous epithelium with a granular cell layer. The cyst is intact without atypia or adnexal structures. Select the most likely diagnosis.

Choices:

1. Dermoid cyst
2. Epithelial inclusion cyst
3. Cystic hygroma
4. Milia



Photo:Contributed by DermNetNZ

Answer: 2 - Epithelial inclusion cyst

Explanations:

- Epithelial inclusion cysts are filled with keratin and lined with stratified squamous epithelium with a granular cell layer.
- They do not show atypia or adnexal structures.
- Milia describes a tiny epithelial inclusion cyst.
- If on the skin, a dermoid cyst is thin walled and contains fatty masses, horny masses, or hairs.

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Research Concepts:

Moh'd Terbah

Epidermal Inclusion Cyst




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Question 549: A 14-year-old African American presents to the clinic complaining of asymptomatic hypopigmented lesions on her face. Physical examination of the rash is shown. A skin biopsy of the lesion revealed chronic non-specific dermatitis. Which of the following factors could aggravate this condition?

Choices:

1. Stress
2. Sun exposure
3. Trauma
4. Hormonal changes



Photo:Contributed by DermNetNZ

Answer: 2 - Sun exposure

Explanations:

- There are no specific histopathologic criteria for the diagnosis of pityriasis alba.
- Common non-specific histopathologic findings in pityriasis alba include hyperkeratosis, parakeratosis, acanthosis, spongiosis, and perivascular infiltrate.
- Sun exposure accentuates the lesions. Hypopigmentation often becomes more apparent with sun exposure (and darkening of the surrounding skin) during the spring and summer.
- The diagnosis of pityriasis alba is usually straightforward based on clinical presentation. Skin biopsy is rarely necessary. The rash is self-limited, with a return of normal skin pigmentation generally within one year.

Mohd Terbi

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Research Concepts:

Pityriasis Alba




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Question 550: A 5-year-old male child was brought to the clinic by his parents with a rash and low-grade fever for the past two days. He is otherwise fit and well. His vital signs are normal. The rash shown is predominantly seen on the soles of his feet and also involves his palms. What is the likely pathogen behind his condition?

Choices:

1. Enterovirus 71
2. Coxsackievirus A16
3. Varicella zoster virus
4. Erythrovirus (Parvovirus) B19



Moh'd Terbi

Photo:Contributed by Dr. Balram Rathish

Answer: 2 - Coxsackievirus A16

Explanations:

- The nature of the rash and predominance of soles and palms should arouse suspicion of hand, foot, and mouth disease (HFMD).
- In the USA, HFMD is most commonly associated with Coxsackievirus A16.
- Enterovirus 71 also causes HFMD but is less common than Coxsackievirus A16. Enterovirus 71 infections are also associated with more severe complications.
- Varicella zoster virus and Erythrovirus (Parvovirus) B19 are differentials in this case but do not generally tend to affect palms and soles.

Mohd Terbi

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Research Concepts:

Hand Foot And Mouth Disease




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Question 551: A child is seen with complaints of recurrent seizures and intellectual disability since birth. The mother denies any birth injury. Examination reveals numerous whitish-pink facial lesions. The mother claims that her other son also has similar symptoms. What is the most likely diagnosis?

Choices:

1. DiGeorge syndrome
2. Tuberous sclerosis
3. Fetal alcohol syndrome
4. Pierre robin syndrome



Photo:Contributed by DermNetNZ

Answer: 2 - Tuberous sclerosis

Explanations:

- Most patients with tuberous sclerosis are diagnosed between the ages 2-6.
- The individual often presents with ash leaf-like skin lesions and facial angiofibromas.
- Seizures occur in more than 80% of infants and are usually associated with intellectual disability.
- Other features of the disorder include behavior problems and giant cell astrocytomas.

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Moh'd Terbi

Research Concepts:

Tuberous Sclerosis




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Question 552: A 4-month-old female is brought to the emergency department after she stopped breathing for about 30 seconds. The mother reports her lips turned blue and she didn't resume breathing until she blew in her face. The patient had no symptoms before the event. She is breastfed and has had all immunizations. On exam, the patient is alert and irritable. There is dried blood at both nares. Oxygen saturation is 97 percent on room air. The rest of the exam is normal. Electrolytes, serum glucose, and CT of the head are normal. Chest radiograph shows posterior rib fractures. Select the most likely diagnosis.

Choices:

1. The rib fractures are secondary to CPR performed by the mother
2. The rib fractures are from birth trauma
3. The rib fractures are secondary to abuse in the past
4. The patient most likely has osteogenesis imperfecta

Med'd Terbi

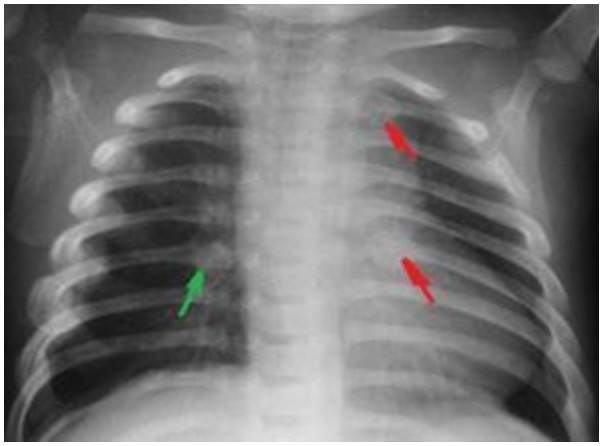


Photo:Contributed By National Institute of Health (NIH)

Answer: 3 - The rib fractures are secondary to abuse in the past

Explanations:

- The patient presents with an apparent life-threatening event/brief resolved unexplained event, but the blood at the nares and the rib fractures indicate evidence of abuse.
- The infant should be admitted.
- Both social services and the police should be notified.
- Posterior rib fractures are evidence of a shaking injury.

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Research Concepts:

Moh'd Terro

Child Abuse and Neglect

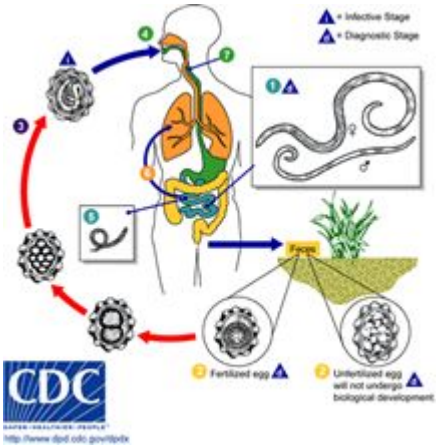



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Question 553: A 16-year-old immigrant from Central America presents with nausea, vomiting, and abdominal pain. He has lost his appetite, and his abdomen is distended. Plain abdominal x-rays reveal that he has dilated loops of bowel with multiple air-fluid levels. There is no air in the rectal area. Stool samples are sent and confirm a parasitic infection. How was his infection transmitted?

Choices:

1. Mosquito bite
2. Oral ingestion
3. Pediculus humanus corporis
4. Sexual intercourse



Moh'd Terbi

Photo:Contributed by Wikimedia Commons, CDC (Public Domain)

Answer: 2 - Oral ingestion

Explanations:

- Ascaris lumbricoides is a nematode or roundworm that causes ascariasis. One of the complications of this infection is bowel obstruction.
- Infection with Ascaris occurs when the host ingests eggs found in stool-contaminated soil.
- This disease has been described in children and adults in tropical and subtropical areas with poor sanitation and poor personal hygiene and in places where human feces are used as fertilizer.
- In the intestines, adult worms copulate, and the female can produce approximately 200,000 eggs per day. The eggs are eliminated in the feces to the soil. They can be ingested and restart the infective cycle.

Moh'd Terbi

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Research Concepts:

Ascariasis




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Question 554: A 16-year-old man presents to the clinic, due to an abnormal EKG found on a sports physical done at school. The 12-lead ECG the findings are as follows: inverted P waves in leads 1 and aVr, dominantly negative QRS in lead 1, low voltage in leads V4-V6, and inverted T waves in lead 1 and aVL. Which of the following is the most likely cause of his ECG findings?

Choices:

1. Idiopathic hypertrophic cardiomyopathy
2. Unstable angina
3. Wolff Parkinson White syndrome
4. Dextrocardia

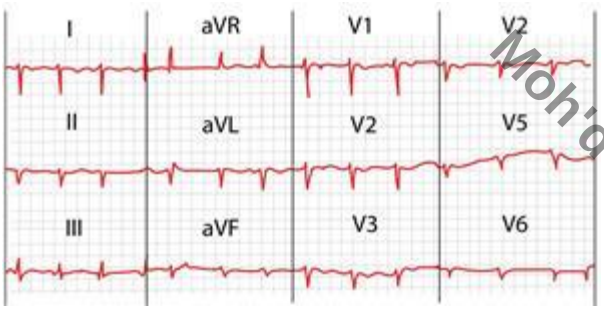


Photo:Contributed by Rian Kabir, MD

Answer: 4 - Dextrocardia

Explanations:

- Dextrocardia is a rare cardiac anomaly that presents itself with unusual and specific electrocardiographic features which include inversion of P waves in leads I and aVL, reversed R wave progression in chest leads, low voltage QRS axis in V4 to V6, and inverted T waves in lead I and aVL.
- Primary ciliary dyskinesia (PCD), formerly known as immotile cilia syndrome, is a disorder of motile cilia structure and function that results in chronic oto-sinopulmonary disease. Primary ciliary dyskinesia typically presents with respiratory distress in infants, early onset year-round cough, and nasal congestion. Kartagener syndrome is a triad of chronic sinusitis, bronchiectasis, and situs inversus resulting from ciliary dyskinesia.
- When you suspect a patient has dextrocardia, place the ECG lead backward, i.e. left limb leads should be placed on the right side. If the leads are in their usually conventional location, the EKG will show inverted P and T waves, in lead 1.
- Wolf-Parkinson White syndrome would present with a delta wave on EKG. Unstable angina would be uncommon in an otherwise healthy child and can often have normal EKG patterns unless at the time of pain. Hypertrophic cardiomyopathy would not result in low voltage on an EKG>

Mohamed Tarek

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Research Concepts:

Ciliary Dysfunction

StatPearls Knowledge Base

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Moh'd Terbi

Question 555: A 17-year-old female patient presents to the hospital with multiple deep ulcerations on her right hand and wrist. They are an average of 3 x 3.5 centimeters in diameter and have a clearly defined border. She is left-handed. Her past medical history includes borderline personality disorder, with impulsiveness being a major symptom. On further questioning, she reveals that she has been having some relationship issues and is feeling stressed and suffering from self-hate and guilt. What is the most appropriate next step in managing her condition?

Choices:

1. Referral to the psychiatric department
2. Prescription of anti-psychotics
3. Prescription of oral corticosteroids
4. Discharge and make another appointment in 2 weeks' time

Moh'd Terbi



Photo:Contributed by DermNetNZ

Answer: 1 - Referral to the psychiatric department

Explanations:

- This is a diagnosis of dermatitis artefacta, which is characterized by the deliberate production of self-inflicted skin lesions in an attempt to satisfy an unconscious psychological or emotional need.
- Skin lesions in dermatitis artefacta usually appear suddenly and fully formed on accessible sites. This patient is left-handed and hence, the lesions appear mainly on her right hand.
- Patients with dermatitis artefacta often have an underlying psychiatric disorder - neurosis, personality disorder, impulsiveness, or depression.
- The mainstay management for dermatitis artefacta is to treat their underlying psychiatric disorder, which in this patient, is borderline personality disorder.

Mohamed Terbi

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Research Concepts:

Dermatitis Artefacta

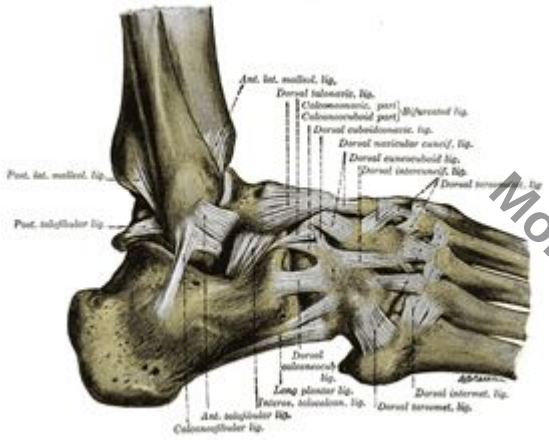



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Question 556: A basketball player falls and twists his right ankle. It is believed that he has suffered an ankle sprain. Which of the following ligaments is most commonly damaged in this type of injury?

Choices:

1. Anterior talofibular ligament
2. Deltoid ligament
3. Calcaneofibular ligament
4. Posterior talofibular ligament



Moh'd Terbi

Photo:Contributed by Gray's Anatomy Plates

Answer: 1 - Anterior talofibular ligament

Explanations:

- The ankle joint is stabilized by three ligamentous systems: the lateral ligament complex, the medial deltoid ligament, and the syndesmotic ligaments.
- Most ankle sprains involve the lateral ankle and the anterior talofibular ligament is the most commonly injured ligament. This ligament originates from the lateral malleolus and attaches to the talus.
- A positive anterior drawer test in an injured ankle is evidence of an anterior talofibular ankle ligament sprain.
- The posterior talofibular ligament is the least commonly injured ligament of the lateral ankle ligaments.

Mahdi Terbi

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Research Concepts:

Acute Ankle Sprain

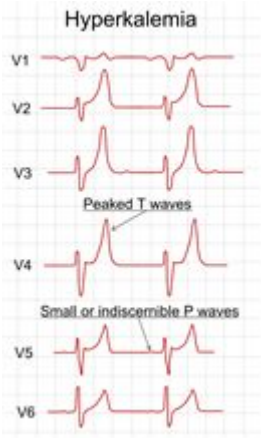



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Question 557: In which electrolyte abnormality in the advanced stage would you expect to see a widening of the QRS and decreased P wave amplitude?

Choices:

1. Hypocalcemia
2. Hypercalcemia
3. Hyperkalemia
4. Hypomagnesemia



Moh'd Terbi

Photo:Contributed by Wikimedia Commons,"Medical gallery of Mikael HÃ¤ggstrÃ¶m 2014" (Public Domain)

Answer: 3 - Hyperkalemia

Explanations:

- The presence of peaked T waves on an ECG should suggest hyperkalemia.
- Severe hyperkalemia may also be associated with wide QRS complexes and a reduction in the size of P waves.
- Hyperkalemia causes an overall membrane depolarization that inactivates many sodium channels.
- Peaked T waves are the earliest changes on the ECG in patients with hyperkalemia. This is usually associated with a short QT interval and ST segment depression. As the hyperkalemia worsens, one will develop a widening of the QRS and decreased P wave amplitude.

Mahdi Terbi

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Research Concepts:

Hyperkalemia




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Question 558: A 6-day-old male is brought to the clinic for his first well-child check since being discharged from the hospital. The parents are concerned about a rash on his face, neck, and upper trunk that developed after bringing him home. They deny the child having any other symptoms or sick contacts. The parents do not believe it is due to a cold as they have increased the home thermostat due to grandparents staying with them. On physical exam, erythematous papules and vesicles appear without follicular involvement on the face, neck, and upper trunk as seen below. What is the most appropriate treatment for the rash?

Choices:

1. Low potency topical corticosteroid
2. Gentle skin exfoliation, breathable clothing, and avoiding hot, humid conditions
3. Topical antibiotics
4. Combination topical antifungal and low potency corticosteroid

Moh'd Terbi



Photo:Contributed by Rian Kabir, MD

Answer: 2 - Gentle skin exfoliation, breathable clothing, and avoiding hot, humid conditions

Explanations:

- This patient has miliaria rubra, the most common form of miliaria. In neonates usually between the ages of 1 to 3 weeks, the groin, axilla, and neck are the most commonly affected areas. In adults, miliaria rubra is most likely seen in places where clothes rub on the skin such as the trunk and extremities.
- Because miliaria results from eccrine duct occlusion, gentle skin exfoliation may remove barriers occluding the ducts. Avoiding situations for increased sweating such as hot temperatures or wearing breathable clothing can reduce the risk of miliaria and assist in its resolution.
- Topical corticosteroids are not necessary for the treatment of miliaria as it is self-limiting. However, they may have a place in the treatment of miliaria rubra to help reduce inflammation.
- Antibiotics are not needed for the treatment of miliaria rubra unless there is a superinfection with staphylococci or other organisms.

Mohit Tehri

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Research Concepts:

Miliaria




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improvement.

Moh'd Terbi

Question 559: A 4-year-old girl is brought by her mother for regular follow-up. The patient's vitals are within normal limits. The mother mentions that she has noticed the patient's urine has been dark for the last few days, but the patient has been eating and drinking normally and has not had any complaints. However, the mother also noticed that the patient's eyes started looking more yellow. The mother is not concerned because her older child, who is now 8-years-old also had similar symptoms and underwent liver biopsy with normal histology and was told his condition is benign. What is the underlying mechanism causing a build-up of bilirubin in the bloodstream of patients with this condition?

Choices:

1. Dysfunctional protein transporters leading to ineffective bilirubin removal
2. The hepatocytes are unable to conjugate bilirubin effectively
3. There is an overproduction of bilirubin that is not able to be effectively removed from the bloodstream
4. There is unregulated intravascular hemolysis

Mohit Tehri

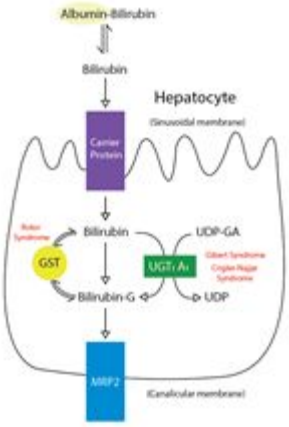


Photo:Contributed by Rian Kabir, MD

Answer: 1 - Dysfunctional protein transporters leading to ineffective bilirubin removal

Explanations:

- The SLCO1B1 and SLCO1B3 genes provide instructions for making organic anion transporting polypeptide 1B1 and 1B3 (OATP1B1 and OATP1B3, respectively).
- The OATP1B1 and OATP1B3 proteins mediate sodium-independent cellular uptake of compounds including bile acids, bilirubin glucuronide, steroid and thyroid hormones, as well as numerous drugs, toxins, and their conjugates.
- In a normal liver, the majority of bilirubin is conjugated by hepatocytes and secreted back into the blood. It is then reabsorbed in downstream hepatocytes by the OATP1B1 and OATP1B3 proteins.
- In Rotor syndrome, the OATP1B1 and OATP1B3 proteins are abnormally short. Therefore the bilirubin is less efficiently taken up by the liver and removed from the body causing a buildup of bilirubin in the blood and urine which results in jaundice and dark urine.

Mohit Tariq

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Research Concepts:

Rotor Syndrome




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improvement.

Moh'd Terbi

Question 560: A 16-year-old male is brought to the emergency department for altered mental status. His mother reports that he has no significant past medical history except for depression. She states he was in his usual state of health yesterday. When she woke up this morning, she found him on the kitchen floor drooling. She noted many empty pill bottles next to him, as well. On arrival to the emergency department, he is lethargic. Vital signs show a heart rate of 120 beats/minute, blood pressure of 95/60 mm Hg. His oxygen saturation is 90% on room air. He is afebrile. During the physical examination, he starts to have a tonic-clonic activity that lasts 30 seconds, after which he becomes pulse-less. The rhythm strip is shown below. What is the most likely cause of his condition?

Choices:

1. Hypoxia
2. Hyperkalemia
3. Prolonged QT
4. Cerebral hemorrhage

Moh'd Terbi

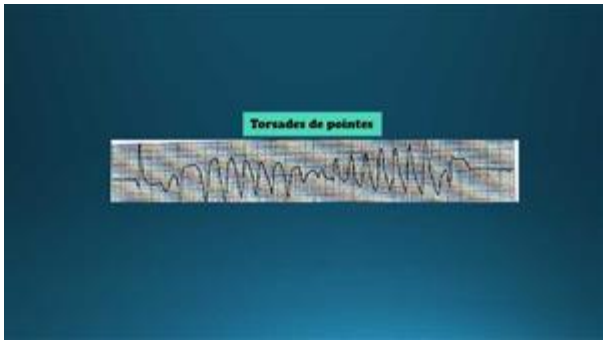


Photo:Contributed by Tammy J. Toney-Butler, AS, RN, CEN, TCRN, CPEN

Answer: 3 - Prolonged QT

Explanations:

- The rhythm strip shows torsades de pointes, which is most commonly caused by the long-QT syndrome.
- Electrolyte conditions most commonly associated with torsades de pointes include hypokalemia, hypomagnesemia, and hypocalcemia.
- Other causes include antiarrhythmic drugs such as quinidine, procainamide, and disopyramide. Antipsychotic agents as well as antidepressants (especially tricyclic antidepressants) can induce this syndrome as well.
- Intracranial hemorrhage has been associated with torsades de pointes however is not common.

Mohd Terbi

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Research Concepts:

Cardiac Arrest




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Question 561: A 13-day-old neonate born at 30 weeks gestation develops poor feeding, abdominal distention, and bloody stools. The mother reports that the patient has just begun bottle feeding. Abdominal radiography shows small amounts of air within the bowel wall. Which of the following is pertinent to the pathological findings?

Choices:

1. Attenuated myenteric plexus acetylcholine esterase staining
2. Sigmoid volvulus
3. Pneumatosis intestinalis
4. Intussusception



Moh'd Terbi

Photo:Contributed by RadsWiki.net (CC By-S.A. 3.0 https://creativecommons.org/licenses/by-sa/3.0/deed.en)

Answer: 3 - Pneumatosis intestinalis

Explanations:

- The signs and symptoms of necrotizing enterocolitis are highly variable, nonspecific, and subtle. Parents often report decreased activity and fatigue. They may also report gastrointestinal symptoms such as decreased appetite, vomiting, diarrhea, and increasing abdominal girth. Patients may also experience blood in the stool.
- As the disease progresses, the patient may experience systemic signs related to respiratory failure and circulatory collapses, such as cyanosis and unresponsiveness.
- Pneumatosis intestinalis is pathognomonic for necrotizing enterocolitis. The tissue of the intestinal wall in patients with necrotizing enterocolitis shows inflammation and bacterial invasion.
- As the disease progresses, tissue shows ischemia, followed by necrosis, and ultimately perforation, which may be either micro-perforation or a frank perforation. Microperforation leads to pneumatosis intestinalis or air within the intestine wall. In perforation, the peritoneal cavity becomes contaminated with bacteria and bowel content, leading to peritonitis.

Mohit Tehri

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Research Concepts:

Necrotizing Enterocolitis



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Moh'd Terbi

Question 562: A male infant is brought to the clinic by his mother for a developmental assessment. The mother just came to the United States from a refugee camp. She states that she delivered her baby while she was in the camp but cannot remember how old her son is. The baby was not born prematurely. On examination, the mouth is stroked with a cotton swab, but the newborn does not turn his head towards the swab and open his mouth. The plantar grasp reflex is present. All other developmental tests are normal. What does this result infer about the age of her baby boy?

Choices:

1. Younger than 2 months
2. Between 2 to 4 months
3. Between 4 and 9 months
4. Older than 12 months

Moh'd Terbi

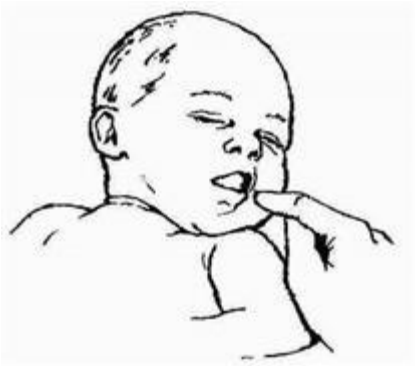


Photo:Contributed by Creative Commons, Ashley Arbuckle (CC BY 2.0)
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Answer: 3 - Between 4 and 9 months

Explanations:

- The rooting reflex is present at birth (approximately 28 weeks) and occurs when the corner of a baby's mouth is stimulated.
- When the mouth is stroked or touched, the newborn will turn his or her head towards the stimulation and open the mouth with tongue thrusting.
- The rooting reflex lasts about 4 to 6 months until the frontal lobe develops and suppresses the reflex.
- The plantar grasp reflex disappears after about 9 to 12 months. The infant with a normal plantar grasp reflex suggests the age of the boy to be younger than nine months.

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Moh'd Terbi

Research Concepts:

Rooting Reflex




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Question 563: A 17-year-old male patient presents to the clinic with visibly blood-stained stool for the past 3 weeks. He says that he has also lately been feeling tired and generally unwell. A review of systems reveals mild weight loss, altered bowel habits, and anorexia. The patient says that his father died when he was only 2 years old due to some “stomach problem”. Vital signs show a blood pressure of 95/65 mmHg, a respiratory rate of 16/min, a temperature of 37 C (98.6 F) and a pulse rate of 90/min. Abdominal examination reveals a nontender, non-distended, soft abdomen with no palpable masses. Cardiovascular and respiratory examinations are unremarkable. A complete blood picture shows a hemoglobin of 10.5 g/dL and an MCV of 70 femtoliters/cell. Fecal occult blood testing is positive and colonoscopy shows 100s of adenomatous polyps. What is the preferred treatment of this disease?

Choices:

Mohsin Terbi

1. Hemicolectomy of the region with polyps
2. Total colectomy
3. Radiation therapy
4. Polypectomy



Photo:Contributed by Steve Bhimji, MS, MD, PhD

Answer: 2 - Total colectomy

Explanations:

- This patient has familial adenomatous polyposis.
- Familial adenomatous polyposis is an autosomal dominant genetic disorder resulting in multiple adenomas that progress to carcinoma. If untreated, the risk of colorectal cancer is 100%.
- Patients with a family history should undergo screening sigmoidoscopy at twelve years of age.
- Gastric and duodenal adenomas are also common in this population so upper endoscopy screening is also necessary.

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Moh'd Tera

Research Concepts:

Familial Adenomatous Polyposis




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Question 564: A 16-year-old boy us being evaluated for continuous headaches associated with increased thirst and increased frequency in urination during the last month. The patient reports that headache is worst in the morning, with associated nausea and vomiting. Laboratory investigations show hypernatremia up to 149 mEq/L. Initial lab work is suggestive of central diabetes insipidus. Brain magnetic resonance imaging reveals a brain tumor in the diencephalon. Which of the following nuclei is most likely responsible for the patient's symptoms?

Choices:

1. Supraoptic nuclei
2. Suprachiasmatic nuclei
3. Preoptic nuclei
4. Anterior hypothalamus

Moh'd Terbi

Answer: 1 - Supraoptic nuclei

Explanations:

- Supraoptic nuclei's main function is the production and secretion of vasopressin.
- Central diabetes insipidus may occur as a result of inhibition of the production or release of vasopressin from the hypothalamus.
- In a patient with continuous headaches and central diabetes insipidus, brain imaging has to be performed to exclude a hypothalamic lesion.
- Vasopressin production and secretion occur mainly in the supraoptic nuclei but also occurs to a lesser extent in the paraventricular nuclei. Other hypothalamic nuclei are not responsible for vasopressin production.

Mahdi Terbi

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Research Concepts:

Hypothalamic Dysfunction




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Question 565: A 7-year-old female with a past medical history of Allgrove syndrome was brought by her parents with complaints of frequent recurrent vomiting and dysphagia due to underlying achalasia. Previously, the patient was on symptomatic anti-reflux medications. After stabilization, a surgical procedure was planned. Which of the following is the next step to relieve current symptoms of achalasia?

Choices:

1. Heller myotomy
2. Botulinum toxin
3. Pneumatic dilatation and nifedipine
4. Esophageal manometry with symptomatic treatment

Moh'd Terbi

Answer: 3 - Pneumatic dilatation and nifedipine

Explanations:

- Esophageal achalasia usually requires a combined approach that includes endoscopic pneumatic dilations, and pharmacological therapy with nifedipine is the initial step to relieve the symptoms of achalasia.
- In patients who remain symptomatic after pneumatic dilatation, an anterior cardiomyotomy (Heller myotomy) may be performed. This surgical procedure involves directly cutting the muscles of the spastic sphincter. Both procedures have a risk of esophageal perforation and a high rate of postsurgical reflux.
- Nifedipine is only a short-term therapy because it does not correct the anatomical condition, and it is associated with possible side effects of flushing and hypotension.
- Botulinum toxin injection into the lower esophageal sphincter has been suggested, exploiting its relaxing activity on muscular fibers; however, its activity lasts only months to years, and it is only a transient correction making it not often considered, especially in pediatric age patients, due to risks and the limited duration.

Mohit Tariq

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Research Concepts:

Allgrove Syndrome



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Moh'd Terbi

Question 566: A 26-year-old G1P0 African-American woman with gestational diabetes mellitus gives birth to a baby boy at 35 weeks gestation. The baby's weight was 4.25 kg and had to be removed through a cesarean section. The neonate did not have a caput succedaneum. On his second day of life, the mother reports the baby is refusing to feed and has abdominal distension. On further inquiry, the baby had not passed meconium yet. On an abdominal x-ray, there are diffuse mildly dilated bowel loops with a bubbly appearance. The baby is given a radiographic contrast enema, and he is able to pass stools. Which of the following is a risk factor associated with this condition?

Choices:

1. Cesarean section
2. Primigravida mother
3. Male neonate
4. Gestational diabetes mellitus

Moh'd Terbi

Answer: 4 - Gestational diabetes mellitus

Explanations:

- The child presents with signs and symptoms of mild intestinal obstruction. Meconium plug syndrome is common in neonates of diabetic mothers. Radiographic contrast enema is the diagnostic test of choice for meconium plug syndrome in addition to being the treatment of choice.
- In diabetic mothers, the higher occurrence of neonatal hypoglycemia induces the pancreas to secrete glucagon. In turn, glucagon decreases peristalsis in the left colon. Furthermore, neonatal hypoglycemia stimulates the autonomic nervous system.
- Increased stimulation of the sympathetic nervous system causes a decrease in intestinal movement, which accelerates the development of meconium plugs.
- Other risk factors associated with meconium plug syndrome are prematurity, infants of mothers who have taken magnesium sulfate for eclampsia, or preterm labor.

Monica Terry

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Research Concepts:

Meconium Plug Syndrome




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Question 567: A 16-year-old boy presents to the clinic with complaints of whitish discoloration of his tongue for 1 week. He has had similar episodes in the past since childhood. He has also been taking treatment for diabetes mellitus for 1 year. His pulse is 80/min, and blood pressure is 120/80 mmHg. Further evaluation is suggestive of a congenital disorder of neutrophil function. Which of the following is the next best step in the management of this patient?

Choices:

1. IV cefipime
2. IV voriconazole
3. Flow cytometry
4. Oral prednisone

Moh'd Terbi

Answer: 3 - Flow cytometry

Explanations:

- The first step in diagnosing myeloperoxidase (MPO) deficiency is the determination of peroxidase activity by histochemical staining of leukocytes, immunocytochemistry, or, more commonly, flow cytometry which allows assessment of functional MPO within neutrophils.
- Immunoblotting of isolated leukocytes for MPO protein also provides additional information into the molecular basis of the observed absence of functional enzyme independent of its enzymatic activity.
- Generally, since most individuals with MPO deficiency do not suffer from infections and are typically asymptomatic, prophylactic antibiotics are discouraged and not indicated.
- Avoid treatments that can increase the propensity of fungal infections, such as prolonged use of antibiotics or steroids.

Mohit Terdal

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Research Concepts:

Myeloperoxidase Deficiency




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Question 568: A 12-old-female patient presents complaining of red, pruritic, and irritated eyes over the past few weeks, associated with a recent increase of pollen in the air. On exam, the clinician finds palpebral conjunctival papillae in both eyes. What is the mechanism of action of the initial treatment for this disease?

Choices:

1. Binding to the bacterial 30S ribosome
2. Reaction with receptor proteins in the cytoplasm to form a steroid-receptor complex
3. Histamine 1 receptor antagonist
4. Competitively inhibits dihydrofolate reductase

Moh'd Terbi

Answer: 3 - Histamine 1 receptor antagonist

Explanations:

- This patient has allergic conjunctivitis. Cool compresses, artificial tears, and antihistamine drops are often used initially as treatment. Antihistamines work as antagonists at the histamine 1 receptor. Topical and oral antihistamines are also used, but topical preparations are more effective.
- Topical NSAIDS may be less effective than topical antihistamines but can have a limited role in the treatment of allergic conjunctivitis.
- For recurrent episodes especially related to seasonal allergies, topical combination antihistamine and mast cell stabilizers used prophylactically are usually most effective. HEPA filters can reduce exposure to allergens.
- Topical corticosteroids have been implicated in glaucoma and cataracts and are generally not used initially for allergic conjunctivitis.

Mona Terbi

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Research Concepts:

Allergic Conjunctivitis




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Question 569: A 9-year-old male child with a known intellectual disability presents to the clinic for a follow-up. When asked questions during the interview, he exhibited circumstantial speech. Which among the following best describes this patient's symptoms?

Choices:

1. There is excessive or irrelevant detail that results in never reaching the essential point of a conversation
2. There are rapidly shifting thoughts that are loosely associated with one another
3. There is unnecessary and insignificant information that, although sometimes relevant, distracts from the central theme but eventually reaches the main point of the conversation
4. There is the use of unintelligible words mixed with seemingly random phrases

Moh'd Terbi

Answer: 3 - There is unnecessary and insignificant information that, although sometimes relevant, distracts from the central theme but eventually reaches the main point of the conversation

Explanations:

- Circumstantiality is defined as circuitous and non-direct thinking or speech that digresses from the main point of a conversation.
- Unlike tangentiality or flight of ideas, the individual eventually reaches the main point of conversation or the answer to a question.
- Circumstantiality is most common in thought disorders (i.e., schizophrenia) and mood disorders with thought disturbances (i.e., mania with psychotic features).
- Circumstantiality can also be found in individuals with obsessive-compulsive disorder, intellectual disability, and temporal lobe epilepsy.

Wloh'd Terbi

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Research Concepts:

Circumstantiality



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Question 570: A 2-week-old infant is brought to the clinic by her mother for her first appointment. During the physical exam, the physician gently places his finger on the infant's palm. She closes her fingers around the physician's finger. At what age does this primitive reflex usually disappear?

Choices:

1. 3 weeks
2. 3 months
3. 6 months
4. 12 months

Moh'd Terbi

Answer: 3 - 6 months

Explanations:

- The palmar grasp reflex appears at birth and persists until four to six months of age.
- When an object is placed in the infant's hand and strokes their palm, the fingers will close and they will grasp it with a palmar grasp.
- The grip is strong but unpredictable. Though it may be able to support the child's weight, they may also release their grip suddenly and without warning.
- The reverse motion can be induced by stroking the back or side of the hand. It usually disappears by 6 months of age. Once the baby starts to crawl and is getting ready to stand.

Mohd Terbi

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Research Concepts:

Primitive Reflexes




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Question 571: A 30-year-old G2P1 gives birth to a liveborn baby boy who weighs 10 lbs, 4 oz (4.7 kilograms). The pregnancy was complicated by gestational diabetes mellitus, and the delivery was complicated by shoulder dystocia. Examination of the newborn is remarkable for an absence of spontaneous movement in his right arm. He holds his arm adducted and internally rotated with the elbow extended. Given the likely diagnosis, which of the following indicates a poor prognosis for resolution of this newborn's condition?

Choices:

1. No spontaneous movement of the fingers
2. Diminished bicipital reflex
3. Ipsilateral ptosis and miosis on ocular examination
4. No resolution in three months

Moh'd Terbi

Answer: 3 - Ipsilateral ptosis and miosis on ocular examination

Explanations:

- Gestational diabetes mellitus (GDM), prolonged labor and delivery, and large fetal size increase the incidence of shoulder dystocia.
- Shoulder dystocia often results in brachial plexopathies, of which upper brachial plexus lesions are most common. The upper brachial plexus originates from nerve roots C5 and C6.
- Severe upper cervical root avulsions can result in ipsilateral Horner syndrome due to damage to the sympathetic chain in the cervical spine. Ipsilateral ptosis and miosis will likely be seen on ocular examination.
- Most brachial plexopathies resolve without treatment, on average in six months, depending on the severity. Only 10% result in permanent damage. Nerve root avulsion and Horner syndrome indicate a poor prognosis for the resolution of Erb palsy.

Moni Terbi

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Research Concepts:

Shoulder Dystocia




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Question 572: A 5-day-old term infant is being evaluated in the NICU. The pregnancy course was uneventful. APGAR scores were 8 and 9 at 1 and 5 minutes, respectively. The baby was stable to stay with the mother in the newborn nursery. At 24 hours of age, the nursed noted the infant to be hypotonic, having difficulties with feeding and had poor respiratory effort. He was subsequently transferred to the neonatal intensive care unit. On admission, the infant was hypotonic and in severe respiratory distress. He had multiple seizures, unresponsive to traditional antiepileptic medications. He was intubated and placed on a mechanical ventilator. Multiple attempts of extubations failed due to recurrent apnea and poor respiratory effort. Workup is significant for an elevated level of very-long-chain fatty acids in the blood. What is the most likely mode of inheritance of the patient's condition?

Choices:

Moh'd Terbi

1. Autosomal dominant
2. X-linked recessive
3. X-linked dominant
4. Autosomal recessive

Answer: 4 - Autosomal recessive

Explanations:

- Neonatal adrenoleukodystrophy (N-ALD) present with hypotonia, respiratory failure, and refractory seizures.
- N-ALD is inherited in an autosomal recessive pattern (in contrast to X-linked ALD that affects children and adults).
- N-ALD carries a poor prognosis (ventilator dependency and ultimately death).
- Laboratory workup suggestive of N-ALD includes elevated serum very-long-chain fatty acids (VLCFA).

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Moh'd Terbi

Research Concepts:

Adrenoleukodystrophy




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Question 573: What is a key feature when ventilating patients with acute respiratory distress syndrome?

Choices:

1. Use high rates of ventilation
2. Use low tidal volume
3. Decrease PEEP
4. Place patent in Trendelenburg position

Moh'd Terbi

Answer: 2 - Use low tidal volume

Explanations:

- The main aim of ventilation in patients with acute respiratory distress syndrome (ARDS) is to oxygenate the patient without causing more lung damage.
- ARDS lungs are stiff and some data reveals that low tidal volumes are the key.
- Overdistention by large tidal volumes has been shown to increase lung damage.
- However, no study has ever shown that low tidal volumes decrease mortality.

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Moh'd Terbi

Research Concepts:

Acute Respiratory Distress Syndrome




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Question 574: A 12-year-old boy is brought to the hospital with multiple, grouped, tense vesicles containing seropurulent fluid on an erythematous base over the palmar aspect of the right index and ring finger. A diagnosis of blistering dactylitis is considered. However, a bacterial culture comes back as negative. Which of the following is the next best step in the evaluation of this patient?

Choices:

1. Antistreptolysin O (ASO) titer
2. PCR for herpes simplex virus
3. Patch testing
4. Prick test

Moh'd Terbi

Answer: 2 - PCR for herpes simplex virus

Explanations:

- The site, age and tense blisters are in favor of a possibility of blistering dactylitis.
- The presence of grouped vesicles could suggest the possibility of herpetic whitlow as a differential diagnosis.
- One of the confirmatory tests for herpetic whitlow is PCR for herpes simplex virus (HSV).
- The other differential diagnoses like pompholyx, seem unlikely in this case and hence there is no role for other investigations like patch testing.

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

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Research Concepts:

Blistering Distal Dactylitis




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Question 575: Select the true statement about familial hypocalciuric hypercalcemia (FHH).

Choices:

1. The etiology is a defect in the parathyroid hormone receptor
2. Treatment is not often necessary
3. There is an autosomal recessive pattern
4. Symptoms usually manifest in the third or fourth decade

Moh'd Terbi

Answer: 2 - Treatment is not often necessary

Explanations:

- Familial hypocalciuric hypercalcemia (FHH) has autosomal dominant inheritance.
- The course of FHH is rarely associated with severe or symptomatic hypercalcemia and does not require therapy to lower serum calcium levels. Although a rare entity, making this diagnosis is crucial because it may prevent unnecessary parathyroidectomy for the patient. Affected family members should be identified and be counseled about the benign nature of the disease. In disease with atypical features like pancreatitis, hypercalciuria or overt hyperparathyroidism, subtotal parathyroidectomy may correct these biochemical and clinical abnormalities.
- The hypercalcemia is usually noted in the first decade of life, but few patients have symptoms or signs.
- Mutations in the parathyroid hormone receptor are present in Jansen disease.

Monica Terbi

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Research Concepts:

Familial Hypocalciuric Hypercalcemia




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Question 576: An 8-year-old male is brought to the healthcare practitioner by his mother with the complaint of muscle aches. On questioning, the patient admits to the pain and weakness of the proximal limb muscles of both the upper and lower extremities, which began one week ago. There is no history of trauma or previous muscle pain. The family history is positive for an aunt with multiple sclerosis. On physical examination, there is tenderness of the muscles with no loss of sensation, and the deep tendon reflexes are normal. There are violaceous papules seen over the metacarpophalangeal and proximal interphalangeal joints bilaterally. What is the primary treatment for the management of this condition?

Choices:

1. Intravenous immunoglobulins (IVIG)
2. Systemic corticosteroids
3. Ibuprofen
4. Infliximab

Moh'd Terbi

Answer: 2 - Systemic corticosteroids

Explanations:

- Dermatomyositis is a rare autoimmune inflammatory myositis of unknown etiology that involves striated muscles and skin.
- The juvenile form of dermatomyositis is associated with multisystemic vasculitis and a high frequency of calcinosis, Gottron papules, symmetrical proximal muscle weakness, and a heliotrope rash.
- It is believed that autoantibodies are directed against an unknown endothelial antigen that is responsible for the vascular injury. Both T and B cells appear to play a dominant role in the disease pathophysiology with the generation of numerous cytokines, including interleukin 6 and 17.
- Systemic corticosteroids are the primary treatment for the management of juvenile dermatomyositis.

Moh'd Terbi

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Research Concepts:

Juvenile Dermatomyositis




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Question 577: A 3900-gram (85th percentile) newborn male is delivered at 39 weeks gestation to a 30-year-old G3P3 woman. The patient was born via normal vaginal delivery but required vacuum-assisted delivery. At 6 hours of age, the nurse reports a swollen deformity of the baby's scalp. Upon physical examination, the baby is hemodynamically stable and well-appearing. Scalp examination reveals a soft palpable swelling over the left temporoparietal area, slight discoloration, and it does not cross the suture lines. The patient's physical examination is otherwise unremarkable. His head circumference is noted to be 36 cm (90th percentile). Which of the following is the next best step in the management of this patient?

Choices:

1. Incision and drainage
2. CT head
3. Reassurance
4. Ultrasound head

Moh'd Terbi

Answer: 3 - Reassurance

Explanations:

- Due to the circumstances of delivery and clinical features (location of the hematoma that does not extend suture lines), the most likely cause of this patient's condition is a cephalohematoma.
- Whenever a clinician diagnoses a cephalohematoma, reassurance with counseling of the parents is necessary.
- Cephalohematomas require observation and most cases resolve in several weeks without any intervention.
- There is no need to drain a cephalohematoma. The patient's condition is not consistent with intracranial hemorrhage, as cephalohematomas occur beneath the periosteum. Thus, further imaging is not necessary. If there is a concern for intracranial injury, computed tomography of the brain (if the patient has clinical signs or symptoms of increased intracranial pressure) or magnetic resonance imaging (to avoid ionizing radiation if the patient is stable) is recommended not only to characterize the area but to determine if there is any underlying skull deformity as well (i.e., fracture).

Mohit Tekh

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Research Concepts:

Cephalohematoma



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Question 578: An infant is born of a healthy mother at 30 weeks gestation and small for gestational age. Serum glucose is 22 mg/dL at one hour. What is the most likely cause of hypoglycemia?

Choices:

1. Infection
2. Inadequate nutritional stores
3. Hyperinsulinemia
4. Adrenal immaturity

Moh'd Terbi

Answer: 2 - Inadequate nutritional stores

Explanations:

- Premature SGA infants have inadequate nutritional stores of fat and glycogen.
- Once the maternal source of glucose is cut off, the neonate develops hypoglycemia.
- Cortisol or growth hormone deficiencies are rare causes.
- Insulin excess is seen in those born of diabetic mothers.

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Research Concepts:

Moh'd Terbah

Hypoglycemia




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Question 579: An 8-year-old female is brought in with a 4-day history of fever and sore throat. She has not had any cough during this period. Her medical and family history is insignificant. She is allergic to penicillin. Her temperature is 101 F (38.3 C), her pulse is 88/min, and her blood pressure is 110/70 mmHg. On physical examination, some exudates are seen on the posterior pharyngeal wall, and tender anterior cervical nodes are palpated. The rest of the physical examination is unremarkable. Which of the following is the treatment for this patient?

Choices:

1. Amoxicillin
2. Clindamycin
3. Linezolid
4. Vancomycin

Moh'd Terbi

Answer: 2 - Clindamycin

Explanations:

- Penicillin is still the antibiotic of choice for group A streptococcal (GAS) pharyngitis. For those with an allergy to penicillin, clindamycin (7 mg/kg/dose, 3 times daily; max = 300 mg/dose; 10 day duration), clarithromycin (7.5 mg/kg/dose. twice daily; max = 250mg/dose; 10 day duration) or azithromycin (12 mg/kg, once daily; max = 500mg/dose; 5 day duration) can be prescribed.
- A first-generation cephalosporin (cephalexin 20 mg/kg/dose, twice daily, max = 500mg/dose; duration ten days) can also be used for those patients without an anaphylactoid reaction to penicillin. As adjunctive therapy for patients with GAS pharyngitis, the IDSA recommends acetaminophen or an NSAID to control pain and fever. Currently, the ISDA does not recommend routine adjunctive therapy with corticosteroids for those with GAS pharyngitis.
- Following antibiotic treatment, patients may see the resolution of symptoms within one to 3 days and may return to work or school after 24 hours of treatment. A test of cure is not recommended after a course of treatment unless a patient has a history of acute rheumatic fever or another GAS complication.
- Those with GAS pharyngitis should be treated with either penicillin or amoxicillin, given their relatively low cost and low adverse effect profile. Penicillin can be prescribed as either 250 mg twice or three times daily for children and 250 mg 4 times daily for adults. If either the clinician or patient prefers an intramuscular approach for penicillin treatment, then benzathine penicillin G can be given as a one-time dose of 600,000 units if the patient is less than 27 kg and 1.2 million U if the patient is greater than or equal to 27 kg. If the prescriber chooses amoxicillin, then the medication can be given 50 mg/kg, once daily with a maximum of 1000 mg per dose or 25 mg/kg twice a day, with a maximum of 500 mg per dose. With either penicillin or

Mon'd Terbi

oral amoxicillin route, a total of 10 days of treatment should be completed.

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Research Concepts:

Streptococcal Pharyngitis




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Question 580: A three-month-old baby girl is brought by her mother to the provider to receive the results of a recent echocardiography study, which was ordered based on a concerning physical examination finding. The study reveals that the child has a rare coronary artery anomaly – a coronary artery fistula. The fistulous connection reportedly exists between the right coronary artery and the right atrium. The provider informs the parent that coronary artery fistulas have a spontaneous closure rate of only 1-2 %. As such, her daughter will likely require trans-catheter treatment to close the fistula and restore normal coronary flow. Which of the following physical examination findings is associated with coronary artery fistulas?

Choices:

1. Cyanosis
2. Continous auscultatory murmur
3. Rales
4. Jugular-venous distension

Moh'd Terbi

Answer: 2 - Continous auscultatory murmur

Explanations:

- Coronary artery fistulas are rare congenital anomalies. They include abnormal communication between a coronary artery and a venous structure (coronary-venous fistula) or abnormal communication between a coronary artery and a cardiac chamber (coronary-cameral fistula) without the presence of an intervening capillary bed.
- Coronary artery fistulas usually drain into a right heart structure, most commonly the right ventricle, right atrium, pulmonary artery, or coronary sinus. Left coronary artery fistulas account for 50% of fistulas, right coronary artery fistulas account for 38%, and 12% of fistulas arise from both right and left coronary arteries.
- Coronary artery fistulas may present in infancy with a continuous auscultatory murmur and may be confirmed by echocardiography. However, presentation is more common in adulthood (60-75%) with symptoms that include chest pain, shortness of breath, and dysrhythmia.
- Coronary artery fistulas have a spontaneous closure rate of only 1-2%. Transcatheter therapy is effective, has a lower morbidity and complication rate, and is preferred over surgery. Transcatheter interventions include coil embolization, occlusion devices such as the Amplatzer occluder, and implantable balloons. Surgical repair is reserved for cases that fail or are not amenable to transcatheter options.

Mehic Tarik

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Research Concepts:

Coronary Artery Anomalies

StatPearls Knowledge Base

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Question 581: A 25-days-old male infant brought in the clinic by his mother with the complaints of very low urination and rapid breathing. This is her first child and was born at 32 weeks of gestation. She has no history of smoking, illicit drug abuse, and alcohol. Vital examination of infant is pulse rate 115/minute, and respiratory rate 62/minute. On examination, the child is cyanosed, hypoplasia of right lower limb, flat nose, low set ears, and prominent epicanthal folds. The urine output is 0.4 ml/kg/hr. What is the most probable mechanism of this syndrome?

Choices:

1. Urinary obstruction due to ureteric anomalies
2. polycystic kidney
3. Bilateral renal agenesis due to the absence of induction of ureteric bud formation from the mesonephros
4. Premature rupture of membrane

Wan'd Terbi

Answer: 3 - Bilateral renal agenesis due to the absence of induction of ureteric bud formation from the mesonephros

Explanations:

- Low urine output or absence of urine along with other common deformities such as flat facies, respiratory distress, lower limb anomalies suggests potter syndrome.
- Many genes, growth factors, and transcription factors are responsible for the induction of ureteric bud formation from mesonephros.
- The absence of induction of ureteric bud formation and branching from mesonephros is the main pathophysiology of renal agenesis.
- Bilateral renal agenesis leads to anuria, which results in a decreased amniotic fluid formation known as oligohydramnios.

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Research Concepts:

Potter Syndrome




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Question 582: A 2-year-old boy with a history of speech delay is brought to the clinic for further evaluation. He had an audiology test and was found to have a bilateral sensorineural hearing impairment. A thyroid swelling is noticed on examination, while thyroid function tests are within normal limits. Pendred syndrome is suspected. What is the most definitive test to confirm the diagnosis?

Choices:

1. Thin-cut CT of the temporal bone
2. Repeat thyroid function testing
3. Detailed family history and evaluation
4. Genetic testing

Moh'd Terbi

Answer: 4 - Genetic testing

Explanations:

- Because of the high variability of phenotype, it is difficult to diagnose Pendred syndrome on the basis of clinical diagnosis, and molecular genetic testing needs to be done to confirm the diagnosis.
- Pendred syndrome usually presents with a euthyroid goiter and sensorineural hearing loss.
- Pendred syndrome has an autosomal recessive inheritance.
- Family history is important, but definitive diagnosis is with molecular genetic testing. Patients with Pendred syndrome have temporal bone abnormalities and vestibular aqueduct enlargement, so imaging is usually done for patients suspected to have Pendred syndrome, but it does not confirm the diagnosis.

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Research Concepts:

Pendred Syndrome




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Question 583: A 3-year-old boy presents to you soon after having swallowed an unknown, circular, metallic foreign body. He notes that "I feel it right here," indicating his sternal notch area. What is the most worrisome complication of this ingested foreign body?

Choices:

1. Abrasion of the esophagus
2. Esophageal perforation and mediastinitis from an esophageal button battery
3. Heavy metal toxicity from a swallowed button battery
4. Spontaneous vomiting and foreign body aspiration

Moh'd Terbi

Answer: 2 - Esophageal perforation and mediastinitis from an esophageal button battery

Explanations:

- A circular, metallic foreign body may be a coin, token, or other inert objects, but it may also be a button battery. Since button battery ingestion may cause serious sequelae, this child should be initially managed as if he had swallowed a button battery.
- Although most swallowed objects pass through the esophagus without complication, a child who points to his esophagus after foreign body ingestion has a high probability of having the object impacted in the esophagus.
- Button batteries lodged in a moist environment create a local electrical current, which can cause substantial tissue necrosis in a matter of a few hours. Thus, esophageal button batteries may cause important injury, including esophageal perforation and mediastinitis, relatively quickly.
- Although esophageal injury and even death from a button battery that has become impacted in the esophagus is well known, heavy metal leakage from a button battery, or spontaneous aspiration of a previously impacted esophageal foreign body, are unusual complications. Esophageal abrasion from a swallowed foreign body, while not uncommon, is a low-risk condition.

Mehdi Terki

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Research Concepts:

Pediatric Foreign Body Ingestion



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Question 584: An 8-year-old boy presents with his mother with a runny nose and sneezing. The symptoms started when they moved to the town a month ago. His mom suspected he had seasonal allergies and has been giving him over-the-counter anti-allergy medication, making him noticeably tired at school. Which of the following drugs would you suggest to this patient to avoid this side effect?

Choices:

1. Chlorpheniramine
2. Diphenhydramine
3. Fexofenadine
4. Ibuprofen

Moh'd Terbi

Answer: 3 - Fexofenadine

Explanations:

- Fexofenadine is a second generation antihistamine.
- Fexofenadine does not enter the central nervous system and therefore causes little or no sedation.
- Fexofenadine is an H1-receptor antagonist.
- Fexofenadine is a food and drug administration (FDA) indicated for the treatment of upper respiratory allergies.

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Research Concepts:

Moh'd Terro

Antihistamines



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Question 585: A 17-year-old man presents to the clinic due to pruritus. A few days earlier, his roommate had received a cream for a similar symptom, but the patient does not recall the name of the prescribed cream. The patient has no significant past medical history. Physical examination reveals inflammatory papules between the fingers and the flexural anatomic sites. Which of the following is true regarding resistance to the first-line treatment for this patient's condition?

Choices:

1. Resistance to this medication has not been reported
2. Resistance to this medication has been reported and impacts the decision to use this medication in particular locales
3. Resistance to this medication is insignificant and does not affect the decision to use it in specific locales
4. Resistance is impossible because this medication physically targets lice

Mon'd Terbi

Answer: 2 - Resistance to this medication has been reported and impacts the decision to use this medication in particular locales

Explanations:

- This clinical scenario depicts a patient with a diagnosis of scabies.
- The first-line treatment for scabies is 5% topical permethrin cream.
- Resistance to permethrin has been reported. Local resistance patterns impact the decision to treat a particular patient with permethrin.
- Permethrin does not physically target lice. Permethrin is a medication that impacts sodium transport across neuronal membranes.

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Research Concepts:

Permethrin




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Question 586: A 2-year-old girl is brought to the emergency department because of a rash in the diaper area. Her mother states that she noticed it today while bathing the child. She denies any trauma or fall. On physical examination, the child is alert, awake, and crying loudly due to the pain. The rash is red and confluent, and the circumferential borders are very distinct, with little tapering of depth at the edges. What is the most likely explanation for this child's findings?

Choices:

1. Splatter burns
2. Staphylococcus scalded skin syndrome
3. Immersion burns
4. Diaper dermatitis

Moh'd Terbi

Answer: 3 - Immersion burns

Explanations:

- The majority of burn injuries in children are scald injuries resulting from hot liquids. Immersion burns can be accidental or intentional and must be assessed for the possibility of child abuse.
- Immersion burns are characterized by circumferential, sharply demarcated burns on the hands, feet, buttocks, and perineum. A sharp upper line of demarcation is usually visible in immersion burns. Accidental burns are usually splash burns with uneven borders.
- Blisters can mimic burns in the Staphylococcal scalded skin syndrome.
- Regarding Staphylococcal scalded skin syndrome, bullae are flaccid and ill-defined. Also, there are associated features, such as fever, rash, conjunctivitis, etc. A nonspecific diaper dermatitis is unlikely to cause pain enough for crying.

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Research Concepts:

Child Abuse and Neglect




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Question 587: A 16-year-old female patient presents with a complaint of difficulty breathing. She is drooling and mentions that her symptoms have progressed over the last few hours. She had a dental extraction in the morning. Physical examination is notable for swelling of her face and lips. There is no pruritis, and no urticaria. She takes no medications and has no exposure to known allergies. What inheritance pattern does this patient's underlying condition follow?

Choices:

1. Autosomal dominant
2. Autosomal recessive
3. X-linked dominant
4. Mitochondrial

Moh'd Terbi

Answer: 1 - Autosomal dominant

Explanations:

- Hereditary angioedema, otherwise known as C1 esterase deficiency, is defined by recurrent episodes of angioedema without urticaria or pruritus. These skin conditions typically involve the legs, hands, face, upper respiratory tract, as well as the gastrointestinal tract. This disorder can lead to airway edema and potentially asphyxiation due to laryngeal swelling.
- While there are nearly 300 pathogenic variants, most are inherited in an autosomal dominant fashion with approximately 25% of cases arising from de novo mutations.
- Common triggers for angioedema attacks include surgery, dental extraction, trauma, angiotensin-converting enzyme inhibitors, tamoxifen, and estrogen-containing drugs.
- Primary treatment involves securing the airway, breathing, and circulation. Medical treatment includes plasma-derived C1 inhibitor, ecallantide (kallikrein inhibitor), and danazol for long-term prophylactic treatment.

Mona Terbi

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Research Concepts:

C1 Esterase Inhibitor Deficiency




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Question 588: A 17-year-old presents with left ankle and lower back pain which started three weeks ago. He denies any injury and states he has been healthy except for a severe case of traveler's diarrhea that resolved without treatment two months ago. Exam reveals tenderness and decreased range of motion of both ankles and the lumbar spine. There is also evidence of mild bilateral conjunctivitis. What is the next step in his management?

Choices:

1. Joint aspiration and cultures
2. Doxycycline for 7 days
3. Oral nonsteroidal anti-inflammatory drugs (NSAIDs)
4. Stool culture for ova and parasite

Moh'd Terbi

Answer: 3 - Oral nonsteroidal anti-inflammatory drugs (NSAIDs)

Explanations:

- Reactive arthritis is an asymmetric polyarthritis triggered by an enteric or genitourinary infection.
- The classic triad of reactive arthritis includes arthritis, urethritis, and conjunctivitis. It occurs in about one-third of patients.
- Symptomatic management is started with NSAIDs.
- Empiric gonorrhea and chlamydia treatment are not indicated in the absence of symptoms. It may be appropriate to utilize a screening test.

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

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Research Concepts:

Reactive Arthritis




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Question 589: A 16-year-old male presents with weakness. About a week prior, he noted tingling sensation on his lower extremities bilaterally, and he denies pain. Upon waking up this morning, he had difficulty in ambulation, he needed assistance to walk and his lower limbs feel heavy. He recovered from a viral infection two weeks ago. On examination, vital signs are within normal limits. Pertinent physical examination show distended bladder. On neurologic examination, there are no cranial nerve deficits. The motor examination of the upper extremities are normal; the lower extremity is 3/5 on the left and 4/5 on the right. There is a sensory deficit to pain, light touch, and temperature on both lower extremities to the level of the umbilicus. Reflexes on the upper extremities are normal and 3+ on both lower extremities. Babinski is positive bilaterally. Which of the following is the best diagnostic study for this patient?

Choices:

Moh'd Terbi

1. Thoracic spine X-ray
2. CT of the thoracolumbar region
3. MRI of the spine
4. Electromyography and nerve conduction studies

Answer: 3 - MRI of the spine

Explanations:

- Transverse myelitis (TM) is a rare, acquired focal inflammatory disorder often presenting with rapid onset weakness, sensory deficits and bowel/bladder dysfunction.
- TM generally occurs around the spinal cord at any level, but most commonly affects the thoracic region. The disorder transverses the spinal cord causing bilateral deficiencies.
- In order to diagnose Transverse myelitis, a compressive cord lesion must be excluded. Exclusion is usually performed by magnetic resonance imaging (MRI). Also, the MRI is the best imaging modality to visualize changes in the spinal cord.
- TM can affect patients of all ages, but it has spiked occurrences around ages 10, 20, and over 40. There is a bimodal peak between ages 10 to 19 and ages 30 to 39.

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Research Concepts:

Transverse Myelitis




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Question 590: A 2-year-old female is brought to a clinic by her parents for a routine check-up. Parents report that their daughter has been diagnosed with Turner syndrome at birth. Physical examination reveals a webbed neck, edema of both upper and lower extremities, and high arched palate. Cardiovascular examination reveals normal S1 and S2 with a systolic murmur but no rub or gallop. Which of the following cardiovascular abnormality is more likely to be present in this patient?

Choices:

1. Ebstein anomaly
2. Bicuspid aortic valve
3. Tetralogy of Fallot
4. Total anomalous pulmonary venous return

Moh'd Terbi

Answer: 2 - Bicuspid aortic valve

Explanations:

- Patients with Turner syndrome are at increased risk for cardiovascular malformations.
- Two of the common cardiac abnormalities seen in Turner syndrome are bicuspid aortic valve and coarctation of the aorta.
- The bicuspid aortic valve is seen in about 30% of patients with Turner syndrome.
- Patients with bicuspid aortic valves may be asymptomatic.

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Research Concepts:

Moh'd Terbi

Turner Syndrome




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Question 591: A 17-year-old female presents with complaints of abdominal fullness and bloating every time she consumes dairy products. Sometimes she has diarrhea with flatulence. However, these symptoms do not occur every time she consumes these foods. Which is the best test to make a diagnosis of her symptoms?

Choices:

1. Lactose in stools
2. Measuring serial blood glucose levels
3. Intestinal biopsy
4. Breath test

Moh'd Terbi

Answer: 4 - Breath test

Explanations:

- A simple test can clarify the issue. After an overnight fast, 50 grams of lactose in a solution with water is to be swallowed.
- If the lactose cannot be digested, enteric bacteria will metabolize it and produce hydrogen. This can be detected in the air the patient exhales. The test takes about 2 to 3 hours.
- A medical condition with similar symptoms is fructose malabsorption.
- The sensitivity and specificity for the breath hydrogen test are 78 and 98 percent, respectively.

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Moh'd Terbi

Research Concepts:

Lactose Intolerance




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Question 592: A 17-year-old female patient presents to the hospital with complaints of diarrhea and abdominal pain for the past seven months. Her vital signs are within normal limits. On physical examination, there are bilateral erythematous painful lesions on her shins. There is no significant family history. Colonoscopy is done for further evaluation, which reveals patchy linear ulcers in the small intestine. A biopsy is taken from one of the ulcer sites, and it reveals erythema and transmural inflammation. What is the most likely diagnosis?

Choices:

1. Ulcerative colitis
2. Whipple disease
3. Crohn disease
4. Eosinophilic colitis

Moh'd Terbi

Answer: 3 - Crohn disease

Explanations:

- The child most likely has inflammatory bowel disease, Crohn disease to be precise. Chronic non-bloody diarrhea with abdominal pain, imaging showing patchy ulcers, and histology demonstrating transmural inflammation are diagnostic of Crohn disease. Erythema nodosum (painful bilateral lesions on the shins) is the associated skin finding in this disease.
- Erythema nodosum (EN) is a common acute nodular septal panniculitis characterized by the sudden onset of erythematous, firm, solid, deep nodules or plaques that are painful on palpation and mainly localized on extensor surfaces of the legs. These nodules are characterized by a typical histological appearance regardless of the etiology, marked by acute inflammation of the dermo-hypodermic junction and interlobular septa of the hypodermic fat, evolving without necrosis or sequelae.
- Patients with small bowel Crohn disease and bile salt malabsorption may present with watery diarrhea and steatorrhea that can lead to protein-calorie malnutrition, hypocalcemia, vitamin deficiency (e.g., vitamin B12), and metabolic bone disease.
- Ulcerative colitis does not show transmural findings, and it is continuous rather than patchy. Whipple disease is associated with erythema nodosum, but colonoscopic and histologic findings in the question are not suggestive. Eosinophilic colitis may present with similar signs and symptoms, but investigations are not suggestive of this disease.

Michio Terui

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Research Concepts:

Erythema Nodosum

StatPearls Knowledge Base

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Moh'd Terbi

Question 593: A 3-month-old female, born at 33 weeks, presents to the emergency department with progressively worsening vomiting. The patient's mother states that the vomiting started one week ago and was described as non-bilious, and the patient has been fussier than usual. Today, the mother is concerned that the patient is not as interested in feeds and is worried that she is becoming dehydrated. Two weeks ago, the mother's boyfriend started caring for the patient during the evenings because her mother had started a new job. Upon presentation to the emergency department, the patient's temperature is 37.5 C (99.5 F), heart rate 170/min, respiratory rate 30/min, and blood pressure 90/52 mmHg. On physical examination, the patient has a full fontanelle, pupils that are equal and reactive, the patient is lethargic, and has an unremarkable abdominal exam. An intravenous catheter is placed, and blood gas analysis, basic metabolic profile, complete blood cell count with differential count, and blood culture are ordered. A bedside dextrose level was 70 mg/dL. During the evaluation, the patient starts to have seizure activity. She is treated with 20 mg/kg of phenobarbital and is stabilized. Which of the following is the next best step in management?

Mohit Tehi

Choices:

1. Obtain an abdominal radiograph
2. Obtain non-contrast computed tomography of the brain
3. Consult pediatric neurology
4. Order an electroencephalogram

Answer: 2 - Obtain non-contrast computed tomography of the brain

Explanations:

- Clinicians should be aware that any child is at risk for abuse.
- In this case, the risk for child abuse is higher due to the presence of a history of perinatal illness, neonatal separation of parents, and history of fussiness, as well as being left alone with the mother's boyfriend.
- The clinical manifestations of an abusive head injury may be nonspecific, thus requiring a high index of suspicion.
- When evaluating an infant for vomiting, a bulging fontanelle, altered consciousness, and seizures should prompt concern for intracranial etiologies. After stabilization, the patient will require head CT imaging to identify any injuries that require immediate neurosurgical intervention. Electroencephalography is not utilized to identify intracranial injury but may be utilized to detect subclinical status epilepticus if the patient is encephalopathic and the intracranial injuries are severe. Pediatric Neurology is not indicated in the acute setting but may be necessary later in the patient's hospital course if the patient develops complications from her intracranial injury. While gastrointestinal etiologies should be considered, the patient has a higher likelihood of intracranial causes of her vomiting.

Mohit Tekriwal

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Research Concepts:

Abuse and Neglect

StatPearls Knowledge Base

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Moh'd Terbi

Question 594: A 6-years-old boy is brought to the clinic for evaluation of a congenital lesion on which the parents have observed the development of a new "lump," which seems to be growing quickly. The medical history is otherwise insignificant. On physical examination, the clinician can observe a pigmented lesion with a bathing trunk distribution, with an ulcerated subcutaneous nodule on the anterior aspect of the upper right leg. A palpate hard lymphadenopathy on his right inguinal region is noted as well. What would be the best next step in management?

Choices:

1. Reassure the parents of the benignity of his lesion, no further workup is necessary
2. An urgent biopsy should be performed, ideally excisional
3. Close follow-up with a three-monthly cutaneous examination is recommended
4. A quality-switched laser is proposed in order to remove the patient's lesion

Mohamed Terbi

Answer: 2 - An urgent biopsy should be performed, ideally excisional

Explanations:

- The patient has a giant congenital melanocytic nevus (CMN) with a characteristic "bathing-trunk distribution."
- Patients with giant CMN are at risk of developing melanoma during childhood. Melanomas arising from CMN tend to present as subcutaneous nodules, sometimes with ulceration. These melanomas tend to be advanced at the time of diagnosis, with a hight Breslow thickness and with lymphadenopathies sometimes already present at the time of diagnosis.
- The patient probably has a melanoma arising from a giant CMN. Therefore, an urgent biopsy is needed in order to establish the diagnosis and decide the most appropriate management strategy.
- Observation is unacceptable when malignancy can not be ruled out on clinical grounds. Laser treatment in CMN can be useful in improving the lesion's cosmetic appearance but should not be performed for medical purposes.

Moh's Terh

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Research Concepts:

Congenital Nevus




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improvement.

Moh'd Terbi

Question 595: A 2-year-old African American male is brought to the office as his parents are worried he might be sick. He is playful and actively growing. The review of systems is negative. The family history is positive for sickle cell disease. His height and weight are at the 55th percentile for his age. His vital signs are normal. His physical examination is unremarkable. Labs show hemoglobin 14.4 g/dl, hematocrit 43%, mean corpuscular volume 90 FL, and reticulocytes 2.5%. Hemoglobin electrophoresis shows hemoglobin A 60%, hemoglobin S 40%, and hemoglobin F 0%. Which of the following complications is the patient at risk for developing?

Choices:

1. Hyperfiltration and hematuria
2. Sepsis
3. Urinary tract infection
4. Pericarditis

Moh'd Terbi

Answer: 1 - Hyperfiltration and hematuria

Explanations:

- Hyperfiltration is from glomerular hypertrophy with eGFR exceeding more than 200 ml/minute/1.73 mt2. Hyperfiltration is seen in 51% of patients with sickle cell disease with contribution from hemolysis mediated vasculopathy.
- Hyperphosphatemia and elevated creatinine clearance are seen in these patients due to proximal tubule hyperfunctioning.
- Self-limiting microhematuria, which can be painless and invisible to painful and gross hematuria, requires transfusions.
- Also, there is increased secretion of uric acid in patients with sickle cell disease.

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Moh'd Terbi

Research Concepts:

Sickle Cell Nephropathy




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Question 596: A 10-year-old female presents to a hospital in Caracas, Venezuela, with altered mental status. Her mother reports her illness has been progressing for one week. She has been febrile and developed confusion and difficulty walking. Her mother states that the family lives on a farm outside the city. Her vital signs are as follows: temperature 39.5 C (103.1 F), heart rate 160 bpm, blood pressure 70/30 mmHg. On physical examination, she is lethargic and is unable to follow commands. A complete blood count (CBC) shows a decreased white blood cell count and a normal hematocrit. A lumbar puncture is performed, and cerebrospinal fluid (CSF) analysis shows an elevated white blood cell count with a lymphocyte predominance, elevated protein, and normal glucose. While in the hospital, the patient develops seizures. Which of the following is the most appropriate treatment for this disease?

Choices:

Mohsen Tehrani

1. Acyclovir 20 mg/kg IV every 8 hours
2. Amphotericin B 1 mg/kg/day
3. Supportive care with intravenous fluids and respiratory support, and symptomatic treatment with antipyretics and benzodiazepines
4. Vancomycin 20 mg/kg IV every 6 hours plus cefotaxime 50 mg/kg IV every 6 hours

Answer: 3 - Supportive care with intravenous fluids and respiratory support, and symptomatic treatment with antipyretics and benzodiazepines

Explanations:

- Most patients infected with Venezuelan equine encephalitis virus (VEEV) will develop a flu-like illness. Children are more likely to develop encephalitis. Approximately 1% of cases are fatal.
- Supportive care is the treatment for Venezuelan equine encephalitis. This includes Intravenous (IV) hydration and antipyretics. Intubation may be necessary for respiratory support or for status epilepticus from meningoencephalitis. Benzodiazepines may be used for seizures.
- There is currently no FDA-approved human vaccine for VEEV. Military and laboratory personnel at high risk may be vaccinated with a live-attenuated or formalin-inactivated vaccine. These vaccines are available for horses in endemic areas, and mass vaccination of horses may help prevent epizootic outbreaks.
- Acyclovir may be used in viral encephalitis, especially with herpes simplex infection. Amphotericin B is used for fungal causes of meningoencephalitis. Vancomycin and cefotaxime is a common treatment for bacterial meningitis.

Moni's Terry

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Research Concepts:

Venezuelan Equine Encephalitis



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Moh'd Terbi

Question 597: A 3-year-old male is brought in by the mother to his primary care provider. He has had significant weight gain and is eating more than his older sister. His growth chart shows his height has maintained at the 50th percentile. His weight has increased from the 50th percentile to the 90th percentile in the past 2 years. The examination is remarkable for slurred speech and hypotonia. He is behind on his developmental milestones. What genetic abnormality is most likely?

Choices:

1. Three copies of chromosome 21
2. Trinucleotide repeat sequences
3. An extra copy of the X chromosome
4. Loss of imprinted genomic material of chromosome 15

Moh'd Terbi

Answer: 4 - Loss of imprinted genomic material of chromosome 15

Explanations:

- The most likely diagnosis in this patient is Prader-Willi syndrome, which is characterized by almond-shaped eyes, behavior problems, intellectual disability, short stature, delayed puberty, muscle flaccidity, gait disturbances, sleep apnea, and constant hunger leading to obesity.
- Prader-Willi syndrome is the most common cause of genetic obesity. Approximately 70% of Prader-Willi syndrome cases arise from the deletion of band 15q11-13.
- It is also characterized by hyperphagia, intellectual disability, obesity, hypotonia, and characteristic 'floppiness.' It is treated by calorie restriction, behavioral therapy, and hormone replacement.
- Macroglossia and hepatosplenomegaly are present in Beckwith Wiedermann syndrome, while polydactyly is present in Bardet Biedel syndrome.

Mehdi Terbi

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Research Concepts:

Prader-Willi Syndrome




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Question 598: A 14-year-old girl with normal development began to have intermittent staring spells and has been found by her teacher not to pay consistent attention in class. Her parents also noted her to have random jerks of arms in early mornings when she drops her cereal bowl during breakfast. What are the likely EEG findings on this patient?

Choices:

1. Left temporal spike and wave discharges
2. Temporal intermittent rhythmic delta activity
3. Bilateral occipital spikes
4. Generalized 3-4 Hz spike and wave discharges

Moh'd Terbi

Answer: 4 - Generalized 3-4 Hz spike and wave discharges

Explanations:

- Juvenile absence epilepsy (JAE) typically starts in adolescence around puberty and is characterized by absence seizures, generalized tonic-clonic seizures, and at times, additional myoclonic jerks.
- Cognitive development is usually normal though weaknesses may be seen on neuropsychological testing.
- EEG in JAE typically shows a 3-6 Hz generalized spike and wave pattern with or without polyspikes.
- Focal discharges such as temporal and occipital epileptiform abnormalities are typically seen in partial-onset epilepsies.

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Moh'd Terbi

Research Concepts:

Juvenile Absence Epilepsy




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Question 599: An 8-year-old male patient presented to the clinician with abdominal pain, nausea, anorexia, and fatigue before the onset of intense episodes of vomiting. Parents reported that the patient had these episodes previously, too, when they would last for hours to days. In between episodes, patients described pain-free and symptom-free intervals that lasted weeks to months. The patient's pulse was 95 beats/minute, and his blood pressure was 100/70 mmHg, and there ware no signs of gastrointestinal tract infection. The patient's temperature was 98.6 F. On examination, the abdomen was non-tender, non-distended, and moved with respiration. The patient's total leukocyte count was at 6000 cells/ cubic millimeter of blood. The clinician ruled out acute appendicitis or any acute infection and suspected an idiopathic syndrome and prescribed sumatriptan to the patient as an abortive therapy because of another disease most linked to the disease the patient was suffering from. What is the other condition most likely associated with this disease the patient was suffering from?

Moh'd Terbi

Choices:

1. Migraine headache
2. Tension headache
3. Hypnic headache
4. Cluster headache

Answer: 1 - Migraine headache

Explanations:

- Some studies have linked migraines to cyclical vomiting syndrome, sumatriptan has been used as an abortive therapy once the diagnosis has been made.
- Migraine-associated cyclic vomiting syndrome usually begins when the patient is a toddler and resolves in adolescence or early adulthood; it rarely begins in adulthood. More females than males are affected by cyclic vomiting.
- Cyclic vomiting syndrome is a diagnosis of exclusion. It is important to differentiate cyclic vomiting related to migraines from non-migraine cyclic vomiting conditions. Other causes of cyclic vomiting include gastrointestinal (GI) tract disorders (malrotation), neoplasms, urinary tract disorders, metabolic and endocrine disorders, mitochondrial deoxyribonucleic acid (DNA) deletions.
- Children with cyclic vomiting associated with migraines tend to experience fewer severe vomiting episodes per hour and fewer attacks per month than those with cyclic vomiting associated with other GI disorders. These children exhibit a higher incidence of pallor, abdominal pain, headache, social withdrawal, motion sickness, photophobia, and physical exhaustion.

Mohd Terbi

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Research Concepts:

Cyclic Vomiting Syndrome



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Moh'd Terbi

Question 600: A 3-year-old young boy presented with a delay in developmental milestones and stunted growth. On presentation, the child had coarse facies, enlarged head with prominent frontal bones, widely placed eye sockets with protruding eyes, flat appearance of the nasal bridge, enlarged lips, and wide-open eyes. The neck is typically short and stiff. Clouding of the cornea is seen on ocular examination. Macroglossia was present. Umbilical hernia and hepatosplenomegaly are noted. A decrease in alpha-Liduronidase enzyme in blood confirmed the diagnosis. This disease is caused due to which of the following?

Choices:

1. Autosomal dominant disorder
2. Increase of lysosomal hydrolase
3. Increase in the metabolism of glycosaminoglycans, heparan sulfate, and dermatan sulfate
4. Deficiency in the metabolism of glycosaminoglycans i.e: heparan sulfate, and dermatan sulfate

Mohit Terbi

Answer: 4 - Deficiency in the metabolism of glycosaminoglycans i.e: heparan sulfate, and dermatan sulfate

Explanations:

- Hurler syndrome is a lysosomal disorder that is transmitted through an autosomal recessive pattern. This disease results from the lysosomal storage of glycosaminoglycans. It is characterized by coarse facies and hearing loss. Intellectual disability and hunchback abnormalities exist as well.
- Hurler syndrome (MPS I H): This is the most common and severe form. Patients develop symptoms shortly after birth and progress rapidly. The symptoms include developmental delay, cognitive decline, characteristic coarse facial features, joint stiffness and contractures, short stature, and cardiac and hepatic disease.
- There is an inborn deficiency in the metabolism of glycosaminoglycans, i.e., heparan sulfate and dermatan sulfate, that results because of deficiency of alpha-L-iduronidase enzyme.
- Deficiency or absence of lysosomal hydrolase - iduronidase enzyme activity is present in this disease.

Monir Tarbi

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Research Concepts:

Hurler Syndrome



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Moh'd Terbi

Section 7

Question 601: A 7-year-old child is brought to the hospital by the mother with complaints of dull pain and bilateral facial asymmetry in the lower jaw for the past one month. On examination, the growth of the child is stunted, and a short neck is observed. Marked macrocephaly is present, and the shape of the head is dolichocephalic. Occipital and frontal bones with frontal bossing are prominent. Hypertelorism of the fronto-occipital area is noted from the lateral view. Depressed and broad nasal bridge with flaring of both nostrils, bilateral prominent supraorbital rim, and eyeballs exhibiting ptosis with ocular hypertelorism are some of the coarse facial features observed. Right-sided facial asymmetry is more marked because of the diffused swelling at the mandibular angle and body. Partial trismus and the enlarged tongue are also observed On abdominal examination, the abdomen is enlarged, the umbilicus is herniated, and massive hepatosplenomegaly is present. He is unable to straighten his hands because they are short and stubby having clawed fingers. Large cyst-like areas of bone destruction are noted on radiographs. An increased amount of heparan sulfate and dermatan sulfate is present on urine examination. Which of the following is most likely present in this patient?

Mohit Tevi

Choices:

1. Deficiency of beta L-iduronidase
2. Elevated levels of beta L-iduronidase
3. Deficieny of alpha L-iduronidase
4. Elevated levels of alpha L-iduronidase

Answer: 3 - Deficieny of alpha L-iduronidase

Explanations:

- Hurler syndrome is an autosomal recessive disorder due to a defective gene that encodes for the enzyme alpha-L-iduronidase (IUDA) that is located on chromosome 4. The deficiency of alpha-L-iduronidase leads to a buildup of mucopolysaccharides in lysosomes.
- Children with Hurler syndrome are usually not born with signs but develop symptoms during the first year of life. Developmental delay may become apparent by the age of 1 to 2 years, with a maximum functional age of 2 to 4 years. The average age of mortality is five years, and nearly all patients die before ten years of age.
- General appearance includes characteristic features, such as coarse facies, enlarged head with prominent frontal bones, widely placed eye sockets with protruding eyes, flat appearance of the nasal bridge, enlarged lips, and wide-open eyes. The neck is typically short and stiff. These characteristic features are formerly described traditionally in the medical literature by the term gargoylism.
- Diagnosis of this condition is based on a thorough clinical examination and measurement of urinary GAG levels, which is a useful screening test. A positive test is suggestive of an MPS, but false-negative results are common. Positive family history is often present.

Mohit Tayal

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Research Concepts:

Hurler Syndrome

StatPearls Knowledge Base

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Moh'd Terbi

Question 602: A 16-year-old male patient with Down syndrome has possibly aspirated a small, plastic bead based on witnessed events at his school three days ago. He is brought to the emergency department by his parents and is in no apparent distress, but has developed a dry cough and very faint expiratory wheeze for the past few hours. He is conversant and pleasant, though extremely nervous to be in the emergency department. Chest auscultation reveals only faint wheezing on the right. He has a history of difficult intubation as well as a difficult IV to place. What would be the imaging modality of choice in this patient?

Choices:

1. Inspiratory and expiratory chest X-ray
2. Rapid spiral computed tomography of the chest
3. Ventilation-perfusion (V-Q) scan
4. Magnetic resonance imaging as the object is radiolucent

Mohamed Terbi

Answer: 1 - Inspiratory and expiratory chest X-ray

Explanations:

- A small round object, if aspirated, is most likely to pass into a more distal bronchus, particularly in this adolescent with minimal symptoms that are delayed in onset.
- Inspiratory-expiratory plain X-rays can potentially demonstrate air-trapping associated with a ball-valve effect from a foreign body in a distal airway.
- Plain film X-rays are much easier to reliably obtain in nervous or potentially uncooperative patients.
- CT and MRI may demonstrate the pathology of interest but will almost certainly require an IV with or without general anesthesia in this patient and are suboptimal. A V-Q scan is used to assess perfusion of the lung and not applicable in this situation.

Mohd Terbi

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Research Concepts:

Airway Foreign Bodies




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Question 603:

A 9-year-old male with class III obesity presents with his mother, who is concerned about her son's obesity which has "gotten out of control." She states that he has a family history of obesity in his father and some paternal cousins. The patient reports a diet with high amounts of saturated fat and sugary drinks. The patient's mother receives assistance from the Supplemental Nutrition Assistance Program, and the patient receives free breakfast and lunch from a public school. He is physically active approximately 20-30 minutes per week. The patient has a blood pressure of 125/83 mmHg and a heart rate of 76 beats per minute. On physical exam, the patient's body mass index is 45 kg/m2. Lab results show mildly elevated serum glucose and triglyceride levels but are otherwise unremarkable. He is well-appearing and is in no acute distress. In addition to addressing the above-identified environmental factors, what additional contributing factors should be addressed for this patient?

Moh'd Terkh

Choices:

1. Evaluate for familial hypertriglyceridemia given the family history of obesity
2. Evaluate for adequate sleep duration and sleep hygiene
3. Evaluate for underlying endocrinologic disorders given the family history of obesity
4. Assess the use of antibiotics that may have altered the gut microbiome leading to increased weight gain

Answer: 2 - Evaluate for adequate sleep duration and sleep hygiene

Explanations:

- Obesity in children is strongly influenced by environmental factors. Environmental factors that contribute the most to obesity in children include a sedentary lifestyle, excess caloric intake, and inadequate sleep.
- Shortened sleep duration or irregular sleep schedules have been associated with obesity in a number of studies. Some studies suggest that this association may be causal as well. Sleep may also have an association with insulin resistance, independent of its association with obesity.
- Children with early bedtimes (8:00 PM or earlier) tend to have less obesity by the time they reach adolescence than those with late bedtimes (9:00 PM or later). Another study evaluated the association of sleep with obesity by conducting a 1-week sleep deprivation experiment, in which sleep deprivation was shown to be associated with increased food intake and weight gain.
- Other environmental factors that may contribute to obesity include alteration of the gut microbiome after antibiotic use, environmental toxins, and some viruses. However, these associations are speculative at this time with evidence from a small number of studies derived predominantly from animal models.

Mohit's Tech

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Research Concepts:

Epidemiologic and Etiologic Considerations of Obesity

StatPearls Knowledge Base

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Moh'd Terbi

Question 604: A 32-year-old woman gives birth through a spontaneous vaginal delivery at 40 weeks of gestation. During the examination of the neonate, the nurse notes respiratory distress in the neonate. She also notes cyanotic episodes at rest and while feeding. These episodes are noted to improve when the neonate cries. The most likely diagnosis for this neonate is which of the following?

Choices:

1. Laryngeal web
2. Choanal atresia
3. Supraglottic stenosis
4. Velopharyngeal insufficiency

Moh'd Terbi

Answer: 2 - Choanal atresia

Explanations:

- Choanal atresia is a congenital disorder in which the nasal choanae, (i.e., paired openings that connect the nasal cavity with the nasopharynx), are occluded by soft tissue (membranous), bone, or a combination of both, due to failed recanalization of the nasal fossae during fetal development.
- If unilateral, it presents with unilateral mucopurulent discharge. If bilateral, the neonate is unable to breathe.
- In the case of bilateral choanal atresia, affected infants have episodes of acute respiratory distress with cyanosis that is relieved with crying and with the return of cyanosis with rest (paradoxical cyanosis).
- Feeding difficulty can be the initial alerting event in which the infants can present with progressive airway obstruction and choke episodes during feeding because of their inability to breathe and feed at the same time.

Mohsen Terbi

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Research Concepts:

Choanal Atresia




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Question 605: A 2-month-old girl presents with a laceration of her left cheek. Both parents are present, but only her father reports the history. He says she had been lying in an infant cushion on the couch when she rolled over and struck her face against the sharp edge of a table as she fell. On exam, the infant is sleeping in her stroller but is easily aroused and looks around the room. She has a 2 cm shallow laceration to her left cheek that does not penetrate to the buccal mucosa. Her scalp and face show no other contusions or lacerations. In addition to wound irrigation and repair, which initial intervention is most likely to improve morbidity outcomes for this infant?

Choices:

1. Use of absorbable sutures for wound repair
2. Complete skin and musculoskeletal examination
3. Prophylactic oral antibiotics
4. CT of the skull and facial bones

Moh'd Terbi

Answer: 2 - Complete skin and musculoskeletal examination

Explanations:

- A history that is inconsistent with the developmental abilities of the patient should raise concern for non-accidental trauma. Abuse can include neglect (such as leaving sharp objects near infants and children). Lacerations from falls typically occur over bony prominences, so the cheek is an unusual location for an isolated laceration from a fall.
- Careful skin and musculoskeletal examination, and consideration of a skeletal survey series of x-rays, may reveal additional signs of abuse.
- A blunt traumatic mechanism of fall should prompt a complete skin and musculoskeletal examination to identify other sites of injury even if parents or patients only report one site of injury.
- Appropriate wound repair in the face should start with irrigation and evaluation of tetanus vaccination status, then anesthesia, sedation, or distraction as dictated by age and injury, and appropriate wound closure (often with absorbable sutures or tissue adhesive). For simple lacerations of the face, CT imaging and systemic antibiotics are not indicated.

Micha Terlit

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Research Concepts:

Pediatric Facial Trauma



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Moh'd Terbi

Question 606: A 5-year-old boy is brought in by his parents with a four-day history of painful oral vesicular lesions, fever, and eating difficulty. He has no significant past medical history and is up to date with vaccinations. His oxygen saturation is 98% on room air, respiratory rate 18 breaths/min, heart rate 95 beats/min, blood pressure 100/60 mmHg, and temperature 99 F (37.2 C). Intraoral examination reveals erythema of the pharynx and small vesicles and ulcers on the anterior tongue, hard palate, and gingiva. Given the likely diagnosis, what is the most appropriate treatment for this patient's condition?

Choices:

1. Symptomatic treatment only
2. Symptomatic treatment and systemic acyclovir
3. Symptomatic treatment and systemic foscarnet
4. Symptomatic treatment and systemic ribavirin

Med'd Terbi

Answer: 1 - Symptomatic treatment only

Explanations:

- The patient in this clinical scenario most likely presents with acute herpetic gingivostomatitis, a primary infection caused in most cases by the herpes simplex virus type 1 (HSV-1). Primary infection with HSV-1 most commonly occurs during childhood. It is asymptomatic in most patients, with only a few presenting with acute illness.
- Patients with acute herpetic gingivostomatitis present with a characteristic oral vesicular-ulcerative eruption. The lesions may also extend to the perioral skin and vermillion border of the lips.
- The treatment for acute herpetic gingivostomatitis in healthy patients aims at alleviating symptoms (symptomatic treatment): bed rest, soft diet, topical and systemic analgesia, e.g., NSAIDs. Prescribing chlorhexidine mouthwash will prevent secondary infection of oral lesions.
- Systemic treatment with acyclovir is reserved for immunocompromised or severely ill patients.

Mom'd Terri

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Research Concepts:

Herpetic Gingivostomatitis




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Question 607: A 1-year-old boy is evaluated for cleft palate repair.

Surgical history is significant for the repair of truncus arteriosus when he was eight days old. Physical exam reveals small ears, flat nasal bridge, and a hypoplastic mandible. He has a well-healed midline sternotomy scar. Laboratory evaluation demonstrates low serum calcium and elevated serum phosphorus. What is the most appropriate explanation for the patient's hypocalcemia?

Choices:

1. Maternal drug use
2. Hepatopathy
3. Hypoplastic parathyroid glands
4. Hypomagnesemia

Moh'd Terbi

Answer: 3 - Hypoplastic parathyroid glands

Explanations:

- DiGeorge syndrome (DGS) is characterized by the CATCH-22 mnemonic: cardiac anomalies, abnormal facies, thymic hypoplasia, cleft palate, and hypocalcemia secondary to microdeletion of chromosomal locus 22q11.2.
- This patient's hypocalcemia, coupled with abnormal facial features, truncus arteriosus, and cleft palate should raise suspicion for a DGS diagnosis.
- Hypocalcemia occurs due to defective embryologic pharyngeal pouch formation. This leads to varying degrees of parathyroid hypoplasia in patients with DGS.
- Maternal drug use fails to explain this patient's presentation. Hepatopathy and hypomagnesemia are differential diagnoses in the evaluation of hypocalcemia but do not apply to this scenario.

Moh'd Terbi

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Research Concepts:

DiGeorge Syndrome




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Question 608: A 17-year-old male presents with right hip pain after a direct hit to the hip while playing football. Examination is notable for ecchymoses and tenderness over the right iliac crest and limited range of motion of the right lower extremity. Radiographs are negative for acute bony injury. What is the most appropriate initial management?

Choices:

1. Magnetic resonance imaging of the right hip
2. CT scan of the right hip
3. Protected weight-bearing
4. Rest, ice, and NSAIDs

Moh'd Terbi

Answer: 4 - Rest, ice, and NSAIDs

Explanations:

- Hip pointer injuries do not require a period of protected weight-bearing following the injury. Rest, ice, NSAIDs, and physical therapy are the primary initial management.
- Hip pointer injuries result from direct trauma without the presence of an audible "pop" heard at the time of injury (differentiating the condition from iliac apophyseal avulsion injuries).
- Patients often present with focal pain and weakness.
- Hip pointer injuries are almost always managed nonoperatively.

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Moh'd Terbi

Research Concepts:

Hip Pointer Injuries




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Question 609: A 10-day-old girl is brought to the neonatal emergency department with a history of tachypnea and retractive breathing. The patient was born via elective cesarean section at 37 weeks of gestation, weighing 2,800 g. On examination, her body temperature is 37.8 C (100 F), heart rate 155/min and regular, blood pressure 87/43 mmHg, respiratory rate 60 breaths/min, and blood oxygen saturation is 95% on room air. On auscultation, a continuous murmur is heard at the left upper sternal border. An arterial line is secured for blood sampling, which showed two peaks in systole on the arterial tracing. What is the most likely diagnosis?

Choices:

1. Patent foramen ovale
2. Atrial septal defect
3. Patent ductus arteriosus
4. Ventricular septal defect

Moh'd Terbi

Answer: 3 - Patent ductus arteriosus

Explanations:

- Bisferiens peaks in the radial artery tracing in the newborn infant may suggest the presence of a patent ductus arteriosus (PDA) with a left-to-right shunt. The ductus arteriosus will close in virtually all healthy term newborns by 72 hours of age.
- An augmented peak flow with an abrupt decline after the high peak in PDA, resulting in a sharp pressure peak with a steep decline after the peak, was thought to explain the first sharp peak of pulsus bisferiens. An abrupt decline of flow after peak flow is thought to be due to the fast runoff of blood through the ductus.
- A patent ductus arteriosus (PDA) is rare in healthy term newborns. As gestational age decreases, the incidence of PDA increases. In extremely premature infants, especially those with respiratory distress syndrome, up to 80% may have a PDA at 3 days of age.
- A PDA can result in blood flowing from the descending aorta across the patent ductus arteriosus into the pulmonary circulation ("left-to-right"). This results in pulmonary edema.

Mon'd Tarbi

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Research Concepts:

Pulsus Bisferiens




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improvement.

Moh'd Terbi

Question 610: A 5-year-old child is brought to the clinic by her parents with complaints of a rash of poor vision, saddle nose, and short stature. On physical examination, there is a rash on his cheeks, arms, legs, and buttocks. Upon inquiry, the parents describe that the child started developing this rash on cheeks at first after 4 months of birth. Which mutation is most likely to be responsible for this condition in this child?

Choices:

1. Mutations of the RECQL4 gene
2. p53 gene mutation
3. KRT9 gene mutation
4. LAMA 5 gene mutation

Moh'd Terbi

Answer: 1 - Mutations of the RECQL4 gene

Explanations:

- The sign and symptoms in this patient are suggestive of poikiloderma congenital. Congenital poikiloderma is also known as Rothmund-Thomson syndrome (RTS). The gene responsible for RTS1 has not yet been found. RTS2 is due to homozygous or heterozygous composite mutations of the RECQL4 gene.
- There are 2 types of Rothmund-Thomson syndrome. Type 1 (RTS1) is characterized by rapidly-progressive, bilateral, and juvenile cataracts. In contrast, type 2 (RTS2) is characterized by congenital bone abnormalities and an increased risk of osteosarcoma in childhood and squamous cell carcinoma at an older age.
- The gene responsible for RTS1 has not yet been found. RTS2 is due to homozygous or heterozygous composite mutations of the RECQL4 gene. RTS1 is characterized by rapidly progressive bilateral juvenile cataracts. RTS2 is characterized by congenital bone abnormalities.
- RTS2 is characterized by an increased risk of osteosarcoma, which is in correlation with congenital bone abnormalities.

Wen-a Terbi

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Research Concepts:

Poikiloderma Congenitale



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Moh'd Terbi

Question 611: A 1-week-old female infant born at 37 weeks gestation is being monitored in the pediatric intensive care unit for severe pulmonary hypertension. She is intubated for respiratory support, and her oxygen saturation (O2%) remains 87% despite maximum ventilator settings. Inhaled nitric oxide therapy is initiated in an attempt to avoid extracorporeal membrane oxygenation. Which of the following is the most likely mechanism of action of nitric oxide benefiting this patient?

Choices:

1. Nitric oxide induces guanylate cyclase to produce cGMP, which modulates smooth muscle relaxation
2. Nitric oxide interacts with sarcomeres to induce calcium release and smooth muscle relaxation
3. Nitric oxide chelates calcium within the intracellular environment to induce smooth muscle relaxation
4. Nitric oxide induces adenylate cyclase to produce cAMP, which modulates smooth muscle relaxation

Mohamed Terbi

Answer: 1 - Nitric oxide induces guanylate cyclase to produce cGMP, which modulates smooth muscle relaxation

Explanations:

- Nitric oxide is formed from L-arginine via tissue-specific arginine synthases. This product induces numerous cascade signaling pathways.
- One signaling pathway nitric oxide mediates is the conversion of GTP to cGMP via stimulation of guanylate cyclase activity.
- cGMP affects numerous cascade signaling pathways, but the most prominent involves the activation of protein kinases that affect the sequestering of intracellular calcium and, in turn, enable smooth muscle relaxation.
- Smooth muscle relaxation mediated by nitric oxide in the lungs enables improved oxygenation within patients.

Mohud Terbi

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Research Concepts:

Nitric Oxide




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Question 612: A 10-year-old boy is brought to the emergency department by his mother due to pain in the left knee for two days. The child reports bumping into the edge of a table in the living room and now has swelling and pain in the left knee. Family history is significant for a maternal uncle who died after developing retroperitoneal hemorrhages from a minor motor vehicle accident five years ago. Examination shows a comfortable boy with marked ecchymoses and swelling over the left knee. Which of the following laboratory findings is associated with his presentation?

Choices:

1. Prolonged prothrombin time
2. Prolonged partial thromboplastin time
3. Prolonged thrombin time
4. Prolonged international normalized ratio

Moh'd Terbi

Answer: 2 - Prolonged partial thromboplastin time

Explanations:

- This patient's knee hematoma after minor trauma and family history of bleeding concern for hemophilia. It is an X-linked recessive bleeding disorder due to a deficiency of factor VIII in hemophilia A or factor IX in hemophilia B.
- Hemarthrosis presents with swelling and joint pain episodes after minimal or no trauma since the time the child learns to move. Hemorrhage into the skeletal muscle after minor trauma is also common.
- Factor VIII deficiency results in a prolonged partial thromboplastin time (PTT), with a normal prothrombin time (PT) and thrombin time. Factor VIII is involved in the intrinsic coagulation cascade, which is initiated by factor XII interaction with high molecular weight kinins or kallikrein. This results in serial activation of factors XI and IX. Factor VIII acts as a cofactor with activated factor IX for activation of factor X.
- The PTT measures the function of the intrinsic cascade and is, therefore, prolonged in cases of factor VIII or IX deficiency. The PT measures the extrinsic clotting cascade, with factor VII interacting with tissue factor to activate factor X.

Mehdi Terdi

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Research Concepts:

Hemophilia A



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Moh'd Terbi

Question 613: A 3-year-old boy is brought to the primary care provider's office by his parents for evaluation. He has been suffering from multiple respiratory infections and red-colored skin lesions over the face that have been progressing. The parents also complain of a history of multiple falls due to balance problems since he started walking. His vitals are stable, and examination is consistent with a small for age child with an ataxic gait. Routine CBC revealed low white blood cell counts. Mutations in which of the following gene is the most likely associated with the patient's diagnosis?

Choices:

1. FANCQ
2. BLM
3. NBN
4. ATM

Moh'd Terbi

Answer: 4 - ATM

Explanations:

- The boy most likely has Ataxia-telangiectasia, which result due to mutation in the ATM gene.
- Symptoms of ataxia-telangiectasia include ataxia (cerebellar defects), spider angiomas (telangiectasia), and IgA deficiency.
- Ataxia-telangiectasia is an autosomal recessive disorder. Investigations supporting the diagnosis of ataxia-telangiectasia include increased serum alpha-fetoprotein, decreased IgA, IgG, and IgE, lymphopenia, and cerebellar atrophy on brain MRI.
- Mutation in the BLM, NBN, and FANCQ genes are associated with Bloom syndrome, Nijmegen breakage syndrome, and Fanconi anemia, respectively.

Mahdi Terbi

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Research Concepts:

Chromosome Instability Syndromes




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Question 614:

A 16-year-old boy is brought to the clinic for a well-child examination. His vaccinations are up to date. At the age of 18 months, he received the meningococcal vaccine due to a meningococcus outbreak. Within hours of the vaccine, the boy developed a fever and generalized seizure that lasted about 2 minutes. He was taken to the emergency department for observation and subsequently discharged. He has had no further seizures or other medical problems and takes no medications. Family history is positive for an uncle with febrile seizures during childhood. Vital signs and physical examination are normal. The child is due for a booster dose of the meningococcal vaccine. Which of the following is the most appropriate course of action for this patient's management?

Choices:

1. Discontinue immunizations
2. Administer the booster dose of the meningococcal vaccine
3. Perform electroencephalogram
4. Administer acetaminophen before the vaccine

Mohamed Terbi

Answer: 2 - Administer the booster dose of the meningococcal vaccine

Explanations:

- Fever has been reported as an adverse effect of meningococcal vaccine administration but at a low frequency.
- A history of post-vaccination fever is not a contraindication for meningococcal vaccine re-administration.
- In a case of meningococcal outbreaks, a single dose of meningococcal vaccine is usually recommended in most adults and children (age =24 months).
- The meningococcal vaccine is contraindicated in people known to have a severe allergic reaction to any component of the vaccine.

Mahdi Terbi

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Research Concepts:

Meningococcal Vaccine




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Question 615: A 2-year old boy is brought to the physician for learning and growth delays. He is mostly irritable and has a poor attention span. The physical examination reveals microcephaly, small palpebral fissures, smooth philtrum, thin upper lip, a curved fifth finger, and an upper palmar crease that widens and ends between the second and third fingers. Which of the following is the most likely etiology of this patient's condition?

Choices:

1. Prenatal alcohol exposure
2. Congenital rubella infection
3. Chromosomal abnormality
4. Maternal diabetes

Moh'd Terbi

Answer: 1 - Prenatal alcohol exposure

Explanations:

- Under current guidelines, two of the following facial abnormalities are required for a diagnosis of fetal alcohol syndrome; smooth philtrum, thin vermillion border, and short palpebral fissures.
- Fetal alcohol spectrum disorders often result in a curved fifth finger (clinodactyly) and an upper palmar crease that widens and ends between the second and third fingers ("hockey stick" crease).
- In addition to the characteristic facial features, central nervous system involvement, and either in utero or postnatal growth retardation are required to make a diagnosis of FAS.
- Alcohol is a teratogen, the effects of which may vary depending on the quantity, frequency, and in which trimesters the alcohol is consumed.

Mo'd Terbi

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Research Concepts:

Fetal Alcohol Syndrome




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Question 616: A 16-year-old male falls off of his bicycle while visiting a national park. He has an acute onset of headache and one episode of emesis. He is treated at the local ranger station and is stable and dismissed as the headache improved. One week later he back home and slips on the soap in the shower and falls. He is brought to the emergency department due to headache. He is alert and awake and has a mild diffuse headache without nuchal rigidity. There is no reported loss of consciousness. He is neurologically intact. A computed tomography (CT) scan of the head identifies an isodense three mm-thick lenticular shaped fluid collection in the right superior frontal region stopping at the coronal suture. His lab work is within normal limits for a complete blood count and basic metabolic panel. No obvious skull fractures are identified. What is the best initial management for this patient?

Choices:

Mohit Tekh

1. Emergent craniotomy for evacuation of epidural hematoma
2. Emergent burr holes for evacuation of subdural hematoma
3. Intravenous prothrombin complex conjugate to decrease risk of further hemorrhage
4. Careful serial monitoring and clinical management

Answer: 4 - Careful serial monitoring and clinical management

Explanations:

- Lenticular-shaped fluid collections which stop at the suture line are most consistent with an epidural hematoma.
- Subdural hematomas are described as crescent-shaped.
- Isodense hemorrhage suggests a subacute nature to the blood if the patient is not anemic.
- Smaller asymptomatic epidural hematomas can be watched clinically, especially if they present in a delayed manner.

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Research Concepts:

Moh'd Terbi

Intracranial Hemorrhage




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Question 617: An 18-year-old cross country runner in her senior year of high school develops anterior tibial pain with running. Her BMI is 17.8, and she has not had her menstrual cycle since she was 16. Which of the following hormones is the most responsible for her anterior tibial pain?

Choices:

1. TSH
2. Testosterone
3. Estrogen
4. Progesterone

Moh'd Terbi

Answer: 3 - Estrogen

Explanations:

- The female athlete triad is eating disorders, amenorrhea, and osteoporosis and is commonly seen in activities such as ballet, gymnastics, figure skating diving, swimming, and long-distance running.
- The etiology of this syndrome is an energy imbalance. It affects female athletes who do not have enough nutritional intake to support their amount of exercise.
- Low estrogen levels can result in decreased activity of the osteoblast, preventing the formation of new bone.
- The female athlete triad is a serious illness with potential lifelong health consequences, including death.

Mahdi Terbi

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Research Concepts:

Female Athlete Triad




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Question 618: A 6-year-old male is seen in the outpatient clinic with complaints of difficulty in walking. His parents mention that he has a clumsy gait, often falls while running, and walks on his toes. On examination, it is observed that the patient uses his hands to push himself up to an upright position when arising from the floor. The patient sticks his belly out and pulls back his shoulders to maintain balance while walking. Lab testing shows an elevated creatine kinase level. Which of the following is the most appropriate medication in the management of this patient?

Choices:

1. Diazepam
2. Corticosteroids
3. Tizanidine
4. Dantrolene

Moh'd Terbi

Answer: 2 - Corticosteroids

Explanations:

- Duchenne muscular dystrophy (DMD) is one of the most severe forms of inherited muscular dystrophies.
- DMD is a genetic disease due to the mutation of the dystrophin gene, located on chromosome Xp21. It is inherited as an X-linked recessive trait; however, approximately 30% of cases are due to new mutations.
- No medical cure exists for this congenital dystrophy, and the disease has a poor prognosis. Treatment is centered on glucocorticoid therapy, prevention of contractures, and medical care of cardiomyopathy and respiratory compromise. Glucocorticoid therapy decreases the rate of apoptosis of myotubes and can decelerate myofiber necrosis. Prednisone is used in patients four years and older in whom muscle function is declining or plateauing.
- Studies have shown that glucocorticoid treatment is associated with improved pulmonary function, delayed development of scoliosis reduces the incidence and progression of cardiomyopathy, and overall improved mortality.

Mon'd Terki

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Research Concepts:

Duchenne Muscular Dystrophy



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Moh'd Terbi

Question 619: A 17-year-old girl who recently came from a month trip to India comes to the hospital with a history of non-bloody diarrhea for a week. She also complains of fever for the last 9 days but denies any rigors or chills. Before diarrhea, she had constipation and abdominal discomfort for two days. There is no icterus of eyes or skin. On vital examination, her temperature is 103 F (39.4 C), blood pressure 110/70 mmHg, and the pulse is 60/min. On abdominal examination, there is an erythematous rash present on the abdomen and trunk with generalized tenderness of the abdomen. What is the most likely route of the transmission of the organism responsible for this patient's condition?

Choices:

1. Ingestion of contaminated food
2. Respiratory droplets
3. Intravenous drug abuse
4. Bite from an insect

Moh'd Terbi

Answer: 1 - Ingestion of contaminated food

Explanations:

- Typhoid fever, also known as enteric fever, is characterized by severe systemic illness along with abdominal pain and step ladder pattern fever. The organism responsible for enteric fever is Salmonella Typhi.
- The patient will experience the symptoms of poor appetite, constipation or diarrhea, abdominal pain, step ladder pattern fever, headache, generalized aches and pains, and lethargy. Physical examination usually reveals pallor, signs of dehydration, bradycardia, and abdominal tenderness.
- The bacteria enter the body through water contaminated with human feces, undercooked meat, using fomites (handkerchief, utensils, towel) of the infected person, eating un-covered food contaminated with flies.
- Enteric fever affects mostly younger children and adults than older people. It affects both sexes equally. Enteric fever is more common in over-crowded areas and areas with poor sanitation.

Moh's Tenth

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Research Concepts:

Typhoid Fever




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Question 620: A mother brought her 1-year-old child to the clinic with failure to thrive, chronic diarrhea since birth, swelling of his limbs, abdominal distention, and chronic cough. On examination, he is below the 5th percentile for weight and height; he has non-pitting edema of both his upper and lower limbs and ascites. Chest X-ray showed signs of a pleural effusion. His birth history is unremarkable. He was the product of a normal spontaneous vaginal delivery, his birth weight was 4082 g (9 lbs), and his vaccines are up to date. What is the best next step in management?

Choices:

1. Paracentesis
2. Computed tomography (CT) abdomen
3. Lymphangiogram
4. CA-125

Moh'd Terbi

Answer: 3 - Lymphangiogram

Explanations:

- Congenital causes like congenital lymphangiectasia lead to exudation and leakage of lymph into the peritoneal cavity due to the absence of lymphatic valves, and this leads to the formation of chylous ascites. The patient's age and clinical presentation, including chronic diarrhea and cough with edematous limbs, are suggestive of congenital lymphangiectasia.
- The best approach to establish the diagnosis besides an upper GI endoscopy in cases of diarrhea is lymphangiography of the affected regions.
- Lymphangiography and lymphoscintigraphy are useful in detecting abnormal retroperitoneal nodes, leakage, fistulization, and patency of the thoracic duct. These techniques are also effective for selecting patients for surgery and assessing the effects of treatment, and diagnosing congenital lymphangiectasia.
- Paracentesis is the gold standard for the diagnosis of chylous ascites (CA). Still, in this case, we are looking to diagnose the congenital or genetic reason for this child's condition so that lymphangiography would be a better choice. Computed tomography (CT) of the abdomen is a useful modality to identify abdominal masses and lymph nodes that may be present in some cases of CA. The pathognomonic feature of CA on CT scans is a fat fluid level. CA-125 has been reported to be particularly elevated in cirrhotic patients with chylous ascites.

Moni's Tech

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Research Concepts:

Chylous Ascites

StatPearls Knowledge Base

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Moh'd Terbi

Question 621: A 16-year-old male presents to the emergency department with generalized tonic-clonic seizures. He also has a history of intellectual disabilities and facial and periungual angiofibroma. His echocardiography shows cardiac rhabdomyoma. Which of the following pathologies is most commonly associated with this condition?

Choices:

1. Renal angiomyolipomas
2. Renal stones
3. Perinephric abscess
4. Renal hypertrophy

Moh'd Terbi

Answer: 1 - Renal angiomyolipomas

Explanations:

- Tuberous sclerosis is a genetic disorder that shows autosomal dominant inheritance. Mutations are either of the TSC1 gene on chromosome 9 or the TSC2 gene on chromosome 16 which tends to produce a more severe clinical form of the disorder with a higher frequency and severity of the renal lesions.
- The prevalence in the population is between 1 in 10,000 and 1 in 30,000 individuals.
- The most common renal manifestation is angiomyolipomas, but renal cell cancers, renal cysts, and even oncocytomas have been associated with it.
- Women tend to have more serious manifestations, possibly related to hormones.

Mohud Terbi

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Research Concepts:

Tuberous Sclerosis



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Question 622: A 7-year-old boy visits a pediatric clinic for a regular check-up. The patient's parents report that the patient has difficulty with reading and learning mathematics in the school. Also, the patient scores 70 on the IQ test. Which of the following is the highest level of function expected of this child?

Choices:

1. Achieve the academic skill levels of a 4th grader
2. Read at a middle school level
3. Bowel and bladder control
4. Read at a high school level

Moh'd Terbi

Answer: 2 - Read at a middle school level

Explanations:

- The patient has a mild intellectual disability
- Children with mild intellectual disability can be expected to achieve the academic skill levels of a 7th grader.
- These children will take longer to achieve the milestone of academic level.
- These children are able to develop vocational skills and work in a structured environment.

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Research Concepts:

Moh'd Terbi

Intellectual Disability




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Question 623: A 17-year-old male falls off of his bicycle, and his head hits the pavement on the way down. He denies seeking medical help from the fear of getting stitches and puts pressure on the scalp wound to stop bleeding with a dirty cloth. His father brings him to an emergency department after two days. On examination, he is conscious, alert, and oriented with a Glasgow Coma Scale of 15/15. He is hemodynamically stable with a heart rate of 84 bpm and blood pressure of 124/82 mmHg but has a 5 cm long tear on his scalp. Which of the following additional findings is a contraindication for primary closure of the wound?

Choices:

1. Presence of a foreign body
2. The time since the injury
3. Inflamed (warm, swollen, purulent, and red) wound
4. Tenderness on the edges of the wound

Mohamed Terbi

Answer: 3 - Inflamed (warm, swollen, purulent, and red) wound

Explanations:

- For scalp lacerations, the primary closure of wounds that look inflamed (warm, swollen, purulent, and red) is contraindicated.
- Delayed closure is done 4 to 5 days after cleansing and debriding the wound.
- In most other cases, primary closure is the preferred modality of treatment in scalp lacerations.
- The presence of a foreign body may warrant delayed closure but is not an absolute contraindication for primary closure if adequately removed.

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Moh'd Terbi

Research Concepts:

Scalp Laceration




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Question 624: A 6-months-old otherwise healthy male infant is brought to the clinic with an oval pigmented lesion on his right arm. The lesion's maximal diameter is 2 cm. Hypertrichosis with perifollicular hypopigmentation is seen. When asked, the patient's parents assure the patient was born with that lesion. What is the most appropriate management strategy for this patient?

Choices:

1. Excision of the lesion with a 1cm margin
2. Close follow-up of the patient with excision after 2 years of life
3. Incisional biopsy of the lesion in order to rule out malignancy
4. Reassurance

Moh'd Terbi

Answer: 4 - Reassurance

Explanations:

- The question is describing a single medium-sized congenital melanocytic nevi. These lesions are benign, and their risk of progressing to melanoma is extremely low. Therefore, surgery in these patients is not recommended on medical grounds.
- Patients and their parents can sometimes be distressed due to the "ugly" appearance (color variation, hypertrichosis, etc.). Therefore, they should be reassured about the benign nature of the lesions.
- The development of melanoma before puberty in these patients is exceptionally rare. Hence, follow-up during childhood is not strictly necessary. However, patients (or relatives) should be advised to perform skin self-examinations in order to detect any early changes.
- Biopsy is only required when the diagnosis cannot be clearly established clinically (i.e., to rule out melanoma).

Mohsen Terbi

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Research Concepts:

Congenital Nevus




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Question 625: A 17-year-old female presents with a one-day history of dysuria, with frequency and urinary urgency. She has no other symptoms. Her physical examination is normal. Her vital signs include a blood pressure of 118/82 mmHg, a heart rate of 72 beats per minute, a respiratory rate of 14 breaths per minute, and a temperature of 98.4 F (36.9 C). Urinalysis shows positive leukocytes, positive nitrites, and a pH of 8. The culture report is negative for Escherichia coli. What is the most probable causative organism?

Choices:

1. Enterococcus
2. Klebsiella
3. Pseudomonas
4. Acinetobacter

Moh'd Terbi

Answer: 2 - Klebsiella

Explanations:

- Klebsiella is the next most common causative organism of urinary tract infections (UTIs) in females after Escherichia coli. In older patients, Enterococcus is becoming more frequent, but overall, Klebsiella is still more likely.
- Klebsiella causes about 10% of all UTIs in females. They are rod-shaped, gram-negative organisms with a large polysaccharide capsule. Klebsiella is normal intestinal bacteria that are non-motile.
- Their large polysaccharide capsule covers the entire bacterial surface and accounts for its relatively large microscopic appearance. It is also responsible for the bacteria's resistance to many host defense mechanisms.
- Klebsiella was named after Edwin Klebs, a German microbiologist from the 19th century.

Michi's Terbi

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Research Concepts:

Urinary Tract Infection




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Question 626: A 6-year-old male was diagnosed with Graves disease. What would be the most likely finding on his complete blood count?

Choices:

1. An elevated red blood cell count
2. An elevated white blood cell count
3. Increased hemoglobin
4. Decrease red blood cells

Moh'd Terbi

Answer: 4 - Decrease red blood cells

Explanations:

- A decrease in red blood cell count is commonly seen in pediatric patients with Graves disease.
- The white blood cell count also decreases.
- It is important to take a baseline complete blood count before starting the treatment.
- The treatment of Graves disease also causes a decrease in red blood cell count and a decrease in white blood cell count.

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Research Concepts:

Moh'd Terbi

Graves Disease




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Question 627:

A previously healthy 16-year-old boy is brought to the hospital with 2 days history of fever, headache, nausea, and multiple episodes of vomiting. His temperature is 39.1 C (102.4 F). He is lethargic but oriented to person, place, and time. On examination, he has severe neck rigidity with limited active and passive range of motion. A lumbar puncture is performed. CSF analysis shows marked neutrophil predominance and 40 mg/dL of glucose. An organism with which of the following features is most likely responsible for the patient's condition?

Choices:

1. Encapsulated gram-negative cocci in pairs
2. Non-encapsulated gram-negative cocci in pairs
3. Gram-negative coccobacillus
4. Gram-positive cocci in a cluster

Moh'd Terbi

Answer: 1 - Encapsulated gram-negative cocci in pairs

Explanations:

- Clinical features like fever, headache, vomiting along with neck rigidity on examination is diagnostic of meningitis.
- Low CSF glucose level (50 mg/dL) along with the neutrophilic predominance is suggestive of bacterial meningitis.
- Neisseria meningitis is an encapsulated, gram-negative cocci in pair and is the most common cause of bacterial meningitis in children and adolescents of age group 10-18 years.
- Non-encapsulated gram-negative cocci in pairs are Moraxella catarrhalis and Neisseria gonorrhea. Gram-positive cocci in a cluster are staphylococcus aureus. These organisms are rare causes of bacterial meningitis, especially in the age group of 10-18 years.

Mohd Terbi

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Research Concepts:

Meningococcal Meningitis




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Question 628: A 3-year-old boy is brought to the clinician for evaluation. The mother states that she is worried that her son does not get along with other children. She states that he keeps to himself and is shy. She is concerned if her divorce has had an effect on him. She states he is otherwise healthy and is fully vaccinated. During the evaluation, it is noted that the child can ride a tricycle and climbs stairs using alternate feet. He can also stack 9 cubes and unbutton his shirt. The developmental milestones are considered appropriate for his age. Which of the following milestones is most likely to be present in this child?

Choices:

1. Ability to copy a square
2. Ability to tell a story using full sentences
3. Ability to stand on one foot
4. Ability to feed himself

Moh'd Terbi

Answer: 4 - Ability to feed himself

Explanations:

- This child has been brought for evaluation. His developmental milestones are assed and are found to be appropriate for his age. A three-year-old has the ability to feed themselves along with numerous other social, cognitive, language, and motor skills.
- The ability to feed oneself is an important fine motor milestone. Though most children start to eat between 12-18 months, most children remain messy eaters. At 3 years of age coordination and fine motor skills should have developed sufficiently to allow self-feeding.
- This child should be able to drink from a cup and use a spoon to feed himself. The child also has definite likes and dislikes and is able to eat the same food as the rest of the family.
- The other milestones are unlikely to be seen by age 3 years. The child can copy a square by the age of 5 years and stands on one foot by the age of 4 years. Telling a story using full sentences is seen at the age of five years.

Monir Tarbi

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Research Concepts:

Child Development




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Question 629: A mother brings in her 4-year-old child for evaluation of low mood and energy over the past 8 weeks. He's stopped playing at school because the kids have been making fun of the way he walks. His teachers report that he has fallen out of his chair several times. Although his sleep has been undisturbed, he awakens earlier than usual, holding his head. He eats a regular balanced diet. He continues to draw his favorite superheroes but doesn't like watching TV anymore as he "cannot make sense of what he is seeing." What is the most likely diagnosis?

Choices:

1. Major depression syndrome
2. Adjustment disorder
3. Optic glioma
4. Medulloblastoma

Moh'd Terbi

Answer: 4 - Medulloblastoma

Explanations:

- Medulloblastoma is a highly malignant tumor with a propensity for local invasion and distant metastatic spread through the subarachnoid system, i.e., within the brain and along the spinal cord, also known as "drop mets."
- Thought to originate from the granule cell precursors in the external germinal layer (EGL) of the developing cerebellum, tumor growth starts along the floor of the fourth ventricle and occupies the entirety of the ventricle, subsequently invading both the cerebellar vermis and the brainstem. The symptomatology, thus, reflects this pattern of growth. Children often present with difficulties in coordination and gait (cerebellar signs) and with early morning headaches, nausea, vomiting, papilledema, and double vision secondary to hydrocephalus from obstruction of the fourth ventricle.
- The average time from onset of symptoms to diagnosis is 2 to 3 months.
- Although the patient's mood is low from being teased at school, he does not have any other symptoms of major depression. He eats a balanced, regular diet. He does not have anhedonia. His sleep is mostly undisturbed. No changes in his life have been reported recently, making adjustment disorder also unlikely.

Mohamed Terbi

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Research Concepts:

Medulloblastoma

StatPearls Knowledge Base

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Moh'd Terbi

Question 630: A 17-year-old male patient presented with complaints of anal pain that is worse during defecation. At times, there is associated bleeding with bowel movements but usually not frank hemorrhage. He states that the pain usually persists for hours after defecation. The physical examination in the prone jackknife position reveals a perianal superficial laceration that is longitudinal and extends proximally. What is the preferred management?

Choices:

1. Sphincterotomy
2. Dietary change and topical nifedipine
3. Botulinum toxin injection
4. Topical lidocaine and nitroglycerine

Moh'd Terbi

Answer: 2 - Dietary change and topical nifedipine

Explanations:

- The initial treatment of anal fissures is with medical interventions. Frequent sitz baths, analgesics, stool softeners, and a high-fiber diet are recommended.
- Prevention of recurrence is the primary goal. Adequate fluid intake is also helpful in preventing the recurrence of anal fissures and is strongly encouraged. If conservative management with dietary changes and laxatives fail, other options can be used, including topical analgesics such as 2% lidocaine jelly, topical nifedipine, topical nitroglycerin, or a combination of topical nifedipine and lidocaine compounded by another medication.
- Topical nifedipine works by reducing anal sphincter tone, which promotes blood flow and faster healing. Topical nitroglycerin acts as a vasodilator to encourage increased blood flow to the area of the fissure, increasing the rate of healing.
- While both nifedipine and nitroglycerin are effective treatments, topical nifedipine is regarded to be superior to topical nitroglycerin.

Mehdi Tarih

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Research Concepts:

Anal Fissures




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improvement.

Moh'd Terbi

Question 631: A 6-year-old girl is brought to the clinic with a single red-brown nodule on her neck that becomes erythematous and itchy every time she feels it. A biopsy is performed that shows dermal proliferation of small round cells with pale cytoplasm that demonstrated CD25 immunopositivity. Which of the following cells is most likely to be seen on biopsy?

Choices:

1. Melanocytes
2. Dendritic cells
3. Histiocytes
4. Mast cells

Moh'd Terbi

Answer: 4 - Mast cells

Explanations:

- This patient's presentation is most consistent with mastocytosis.
- Mast cells, when stimulated by touch or rubbing, can degranulate and cause redness and itch.
- They appear as small round cells on histology and positive for CD25 in cutaneous mastocytoma.
- Melanocytic proliferation does not cause pruritus and are not positive for CD25. Dendritic cells have cytoplasmic projections on histology and are not positive for CD25. Histiocytes are large cells with vacuolated cytoplasm and are not positive for CD25.

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Moh'd Terbi

Research Concepts:

Mastocytoma




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Question 632: A 16-month-old boy is being followed at the neuromuscular clinic for a congenital muscular disorder that is caused by the repeat expansion of trinucleotide CTG. The mother has recently noticed dental crowding and caries. Pediatrics advise her that surgical intervention might be needed here. What is the most appropriate next step?

Choices:

1. Referral to dentistry with follow up only when required
2. Referral to dentistry with follow up yearly
3. Referral to dentistry with follow up every 6 months
4. Referral to dentistry with follow up weekly for the next 6 months

Moh'd Terbi

Answer: 3 - Referral to dentistry with follow up every 6 months

Explanations:

- Congenital myotonic dystrophy (CMD) is an autosomal dominant neuromuscular disorder with multisystem involvement. It is a subtype of myotonic dystrophy type 1.
- Features include severe hypotonia and generalized muscle weakness but myotonia is classically absent in infancy.
- Assessment by anesthesia is recommended, especially in patients with poor cardiac/respiratory function. Avoidance of specific agents, including inhaled sedation (halothane), IV sedation (thiopentone), muscle relaxants (succinylcholine, vecuronium), neostigmine, and some chemotherapy, is essential. Propofol-induced pain can induce myotonia.
- Malocclusion, teeth crowding, caries, and gingival hyperplasia (prolonged NPO), prompt an orthodontist evaluation. Consensus statement on standard of care for congenital muscular dystrophies published in 2010 recommended surveillance dentistry assessment every 6 months.

Mohit Tariq

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Research Concepts:

Congenital Myotonic Dystrophy




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Question 633: A 2-year-old child is examined in the pediatric orthopedic office. His family has recently moved to the United States, and he has not been seen by a healthcare provider for the past year. The clinical exam is significant for a congenital radially-angulated left hand and wrist with a hypoplastic thumb. Radiographs of the same extremity reveal an absent radius. A complete blood count and chromosomal breakage studies are ordered to rule out what associated lethal condition?

Choices:

1. Diamond-Blackfan anemia
2. Apert syndrome
3. Fanconi anemia
4. Hurler syndrome

Moh'd Terbi

Answer: 3 - Fanconi anemia

Explanations:

- Radial dysplasia is characterized by a congenital radial deviation of the hand and wrist, as well as a shortened or absent radius.
- Radial dysplasia is commonly associated with a number of congenital syndromes. Some of the most common congenital syndromes associated with radial dysplasia are VACTERL association, Holt-Oram syndrome, TAR syndrome, and Fanconi anemia. Spine x-rays, renal ultrasound, complete blood count, and echocardiography are tests needed to identify common conditions associated with radial dysplasia.
- Fanconi anemia is a potentially lethal condition if not recognized early. If Fanconi anemia is recognized prior to bone marrow failure, then a life-saving bone marrow transplant may be performed.
- Fanconi anemia can be diagnosed by complete blood count, peripheral blood smear, and chromosomal breakage analysis.

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Research Concepts:

Radial Dysplasia




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Question 634: A 7-year-old boy is brought to the emergency department by his mother with complaints of severe upper abdominal pain for the last four hours. The mother reports nausea and one episode of vomiting about two hours ago. She denies any recent history of travel. The patient's temperature is 37.2 C (98.9 F), heart rate 86 beats per minute, blood pressure 118/76 mmHg, and respiratory rate 16 breaths per minute. On examination, the patient appears to be in acute distress, epigastric tenderness is noted on palpation, and multiple yellow-colored plaques are present over both elbows. The mother reports similar appearing plaques over the elbows of the patient's 10-year-old brother. Nonfasting lab results show a serum triglyceride level of 2500 mg/dL (normal 150 mg/dL) and associated chylomicrons. Given the likely diagnosis, what is the normal function of the deficient enzyme causing this child's condition?

Choices:

Moh'd Tenth

1. Activates lecithin cholesterol acyltransferase (LCAT)
2. Catabolizes triglyceride-rich chylomicrons
3. Mediates chylomicron secretion into the lymphatics
4. Coverts 3-hydroxy-3-methylglutaryl-CoA (HMG-CoA) to mevalonic acid

Answer: 2 - Catabolizes triglyceride-rich chylomicrons

Explanations:

- Lipoprotein lipase is the central enzyme involved in the catabolism of triglyceride-rich lipoproteins, mainly chylomicrons and very high-density lipoproteins (VLDL). A reduction or elimination of lipoprotein lipase enzyme activity prevents the breakdown of triglycerides, leading to an accumulation of triglycerides in the blood and tissues.
- Lipoprotein lipase deficiency is a genetic disorder that usually presents in childhood; most affected individuals present by ten years of age. Lipoprotein lipase deficiency classically presents with an attack of acute pancreatitis, manifesting as severe upper abdominal pain with nausea and vomiting. Signs of an acute abdomen like rebound tenderness, guarding, and rigidity may be noted. The attacks are usually recurrent. Fifty percent of patients present with eruptive xanthomas, which are yellow-colored plaques found on the extensor surface of arms, buttocks, trunk, and knees. Eruptive xanthomas usually manifest when the serum triglyceride levels rise above 2000 mg/dL.
- Lipoprotein lipase deficiency is a genetic disorder with an autosomal recessive inheritance pattern. The sibling of an affected individual has a 25 % chance of being affected. Therefore, when lipoprotein lipase deficiency is suspected, always take a detailed family history, including a history of similar clinical manifestations in the siblings.
- 3-hydroxy-3-methylglutaryl-CoA (HMG-CoA) reductase converts HMG-CoA to mevalonic acid. Statins inhibit the HMG-CoA reductase enzyme and cause increased expression of LDL receptors on the hepatic surface. ApoB-48 mediates chylomicrons uptake into lymphatics; therefore, a deficiency of ApoB-48 results in decreased levels of chylomicrons in the serum. Activation of lecithin cholesterol acyltransferase (LCAT)

Mona Tariq

is a function of ApoA-I to produce cholesterol esters and is involved in the HDL production pathway.

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Research Concepts:

Lipoprotein Lipase Deficiency




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Moh'd Terbi

Question 635: A 16-year-old female presents with a complaint of headache, dizziness, tremulousness, and palpitations. She reports her dizziness and lightheadedness are increased when she stands up or is standing for a long time. Her vitals while lying down show a blood pressure of 115/80 mmHg and a pulse rate of 96 beats per minute. Her vitals on standing show a blood pressure of 95/65 mmHg and a pulse rate of 128 beats per minute. What is the underlying mechanism for her condition?

Choices:

1. Increased activation of beta-1 adrenergic receptors
2. Decreased activation of beta-1 adrenergic receptors
3. Decreased activation of alpha-1 adrenergic receptors
4. Increased activation of alpha-1 adrenergic receptors

Moh'd Terbi

Answer: 4 - Increased activation of alpha-1 adrenergic receptors

Explanations:

- Some patients with postural orthostatic tachycardia syndrome (POTS) have been shown to have norepinephrine transporter deficiency due to genetic or acquired defects. This results in decreased synaptic cleft reuptake and increased spillover into the plasma circulation.
- Norepinephrine acts on post-synaptic alpha-1 adrenergic receptors resulting in vascular smooth muscle constriction.
- Increased sympathetic outflow secondary to increased circulating norepinephrine contributes to the elevated supine heart rate observed in patients with orthostatic intolerance.
- Noradrenergic synaptic clefts in cardiac tissue are much narrower compared to similar synaptic clefts in the vasculature. Therefore, decreased transport and reuptake of norepinephrine may lead to a disproportionately increased heart rate compared to blood pressure.

Michael Terbi

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Research Concepts:

Postural Orthostatic Tachycardia Syndrome




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Question 636: A 16-year-old boy presents with a one-year history of intermittent rashes on his arms. The patient claims that the rash itches, but otherwise does not bother him. His past medical history includes asthma, for which he uses an albuterol inhaler. He denies the use of alcohol, tobacco, or illicit drugs. His mother states that she had similar skin symptoms in the past as a young child. On examination, there are erythematous papules and plaques with scaling and crusting on both forearms in the antecubital region. What is the most common adverse effect of the first-line treatment for this condition?

Choices:

1. Hypertension
2. Steroid Rosacea
3. Striae
4. Skin atrophy

Moh'd Terbi

Answer: 4 - Skin atrophy

Explanations:

- Skin atrophy is the most common local adverse effect and occurs due to the anti-mitotic effect of topical corticosteroids.
- Topical corticosteroids cause the skin to undergo three phases of change: pre-atrophy, atrophy, and tachyphylaxis. Atrophy occurs when there is persistent use in the same region.
- Skin atrophy is due to epidermal thinning and increased resorption within the dermal ground substance.
- Atrophy is reversible with cessation of corticosteroid use. However, it may take months for the skin to appear normal again.

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Moh'd Terbi

Research Concepts:

Topical Corticosteroids




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Question 637: A 17-year-old male presents to the healthcare provider after a large splinter broke off and entered his hand. He worked as a carpenter and forgot to wear gloves when he got the splinter in his right hand. It is acutely, painful, and inflamed. Which imaging modality is most likely to help locate the fragment that should be used first?

Choices:

1. Ultrasound
2. Radiograph
3. CT scan
4. MRI scan

Moh'd Terbi

Answer: 1 - Ultrasound

Explanations:

- Ultrasound is quick, easy, and relatively cheap to perform.
- This is an investigation that is good for organic material.
- Ultrasound is also noninvasive.
- A wooden splinter is unlikely to be seen on a simple radiograph.

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Research Concepts:

Wound Foreign Body Removal

Mohamed Erbi




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Question 638: A 17-month-old male is brought to the clinic by his patient for regression of motor activity. The parents have noticed that the boy is clumsy while walking recently and has been having frequent falls. The parents complain of regression of previously attained cognitive milestones. His elder brother had similar symptoms when he was two years old and later died when he reached five years of age. The patient has received all his childhood vaccination. His vital signs are within normal limits. Further blood testing reveals the build-up of cerebroside sulfate. The attending physician orders an MRI brain. Which of the following findings is likely to be seen in his MRI?

Choices:

1. Crescent-shaped hemorrhage
2. Biconvex hyperdense blood collection
3. Well circumscribed mass in the posterior fossa
4. Generalized atrophy and bilateral symmetrical white matter lesions

Mehdi Terbi

Answer: 4 - Generalized atrophy and bilateral symmetrical white matter lesions

Explanations:

- Based on the history, build-up of cerebroside sulfate in blood, and family history, the patient has metachromatic leukodystrophy.
- MRI brain shows generalized atrophy and bilateral symmetrical white matter lesions, which are characteristic of the diseases.
- Arylsulfatase A enzyme activity in leukocytes or cultured skin fibroblasts along with nerve conduction studies can be ordered to confirm the diagnosis.
- Crescent-shaped hemorrhage is seen in epidural hematoma, biconvex hyperdense blood collection is seen in subdural hematoma, and mass in the posterior fossa is seen in polycystic astrocytoma.

Moh'd Terbi

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Research Concepts:

Metachromatic Leukodystrophy




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Question 639: A 17-year-old male presents to the hospital with a complaint of pain in his groin that first appeared six weeks ago. He also reports of swelling in his left scrotum. On further questioning, he reveals that initially, he had pain in his left flank that subsided on its own. A detailed medical history reveals no known medical condition. His vital signs show blood pressure 110/80 mmHg, heart rate 88 bpm, respiratory rate 14/min, and temperature 100 F (37.7 C). A physical examination performed reveals swelling and erythema of the skin of the scrotum on inspection as well as tenderness on palpation. The elevation of the testes relieved his pain. What is the most appropriate initial investigation to be performed?

Choices:

1. Erythrocyte sedimentation rate and C-reactive protein
2. Complete blood count
3. Urinalysis
4. Urine culture

Moh'd Terbi

Answer: 3 - Urinalysis

Explanations:

- This scenario is most consistent with epididymitis. Swelling in the scrotum along with chronic pain and a positive Prehn sign point towards epididymitis. Prehn sign is said to be positive when the scrotal pain is relieved by elevating the testes. Flank pain may or may not be present.
- The first step in evaluating a male patient with scrotal pain should be a urinalysis.
- The presence of red and white blood cells in the urine may indicate an infection or inflammation.
- Urine culture should be done in cases associated with urinary tract infection. A complete blood picture reveals leucocytosis. Recent studies show that erythrocyte sedimentation rate and C-reactive protein may help in differentiating epididymitis from testicular torsion.

Mohd Terbi

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Research Concepts:

Epididymitis




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Question 640: A 17-year-old female presents to her primary care provider with a one-year history of palpitations, which occur more frequently when she travels. She reports a sensation of her heart "beating out of my chest" which begins two days prior to boarding an airplane. She also reports feeling anxious during the flight, and regularly develops blurred vision, sweating, and a rapid heart rate when on airplanes. Her symptoms resolve after arriving at her destination. Her physical examination today is unremarkable. A urine drug screen and blood alcohol level are negative. An electrocardiogram reveals normal sinus rhythm. Which of the following is the most appropriate next step in the management of this patient?

Choices:

1. Refer the patient for a cardiac evaluation
2. Refer the patient for cognitive behavioral therapy
3. Refer the patient for psychodynamic psychotherapy
4. Recommend the patient limit future traveling

Michael Terbi

Answer: 2 - Refer the patient for cognitive behavioral therapy

Explanations:

- Patients with specific phobia experience anxiety, which may include panic attacks, because of anticipated exposure to a feared stimulus.
- In this case, the patient has a phobia of flying and she develops palpitations prior to flying. She also reports feeling anxious during the flight, and regularly develops blurred vision, sweating, and a rapid heart rate when on airplanes. Her symptoms resolve after arriving at her destination.
- Cognitive behavioral therapy is the most effective treatment for specific phobia. This includes systematic desensitization and flooding. In methodical desensitization, the patient is exposed to a list of stimuli ranging from the least to the most anxiety-provoking.
- The cognitive behavioral approach includes reinforcing the realization that the feared stimulus is safe. As the patients become desensitized to each stimulus on the scale, they keep moving up until the most anxiety-provoking stimulus no longer elicits fear or anxiety.

Moh'd Terki

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Research Concepts:

Specific Phobia



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Moh'd Terbi

Question 641: A 4-year old boy reports to the clinic for his well-child check. His mother reports that she has no concerns currently. The patient is able to write his name, follow three-part commands, and can stand on one foot for more than nine seconds. He received a heart transplant one year ago due to end-stage heart failure secondary to congenital heart disease. His mother reports that the child is compliant with the prescribed tacrolimus therapy. Which of the following vaccinations due at this visit cannot be given at this point?

Choices:

1. Tetanus, diphtheria, and acellular pertussis
2. Hepatitis B
3. Varicella
4. Meningococcal

Moh'd Terbi

Answer: 3 - Varicella

Explanations:

- The patient is immunocompromised.
- Varicella is a live-attenuated vaccine, and the second dose is due at this visit.
- Immunocompromised patients cannot receive a live-attenuated vaccine.
- The hepatitis B vaccine and meningococcal vaccine are not due at this visit.

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Research Concepts:

Moh'd Terbi

Heart Transplantation




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Question 642: An 8-year-old male is brought to the emergency department with complaints of a sore throat, difficulty breathing, and fever for the last 12 hours. The mother states that the child is not hungry and is drooling as well. On evaluation, the child is very anxious and speaks with a muffled voice. The mother tried to give him acetaminophen, but he was not able to swallow it. The past medical history is unremarkable. He has no allergies and is not taking any medications. His parents refused to get him vaccinated in his childhood on account of personal beliefs. The distressed child is sitting upright with the face forward. Physical examination is notable for suprasternal retractions, tachypnea, and cyanosis. Which of the following is contraindicated in the management of this patient?

Choices:

1. Intubation
2. Oropharyngeal examination
3. Neck radiograph
4. Empiric antibiotics

Moh'd Terbi

Answer: 2 - Oropharyngeal examination

Explanations:

- Epiglottitis is an inflammatory condition of the epiglottis and nearby structures. It is a life-threatening infection that causes profound swelling of the upper airways, which can lead to asphyxia and respiratory arrest. The cause of epiglottitis is more commonly infectious rather than noninfectious. It can be bacterial, viral, or fungal in origin. In children, Haemophilus influenzae type B (HIB) is the most common cause. However, this has decreased since the widespread use of immunization. Other agents, such as Streptococcus pyogenes, S. pneumoniae, and S. aureus, have been implicated. In immunocompromised hosts, Pseudomonas aeruginosa and Candida have been named. Noninfectious causes can be traumatic such as thermal burns, caustic ingestion, or foreign body ingestion.
- It will usually have an acute onset within the last 24 hours. The patient will appear toxic. Most children have no prodromal symptoms. In the emergency department, the child will likely be sitting upright with the mouth open in a tripod position and possibly have a muffled voice. Drooling, dysphagia, and distress or anxiety are also present. These are often referred to as the 3 Ds. Swelling of the upper airway results in turbulent airflow during inspiration or stridor. Signs of severe upper airway obstruction such as intercostal or suprasternal retractions, tachypnea, and cyanosis are concerning for impending respiratory failure and should signal the provider to act quickly.
- An oropharyngeal exam is usually not performed to evaluate a suspected case of epiglottitis because manipulation of the throat may lead to respiratory arrest. A lateral neck radiograph will show swelling of the epiglottis, also referred to as the “thumb sign.” It is not necessary to make the diagnosis but can be used to narrow down the provider’s differential diagnosis. A flexible fiberoptic laryngoscopy can be performed, but only in a

Mehri Tehrani

controlled setting such as the operating room due to the risk of inducing laryngospasm.

- The mainstay of treatment is to secure the airway. Experienced providers should intubate these patients since their airways are regarded as difficult. An individual capable of performing a tracheotomy should be available if needed. The use of corticosteroids to reduce edema has been cited, with an overall shorter intensive care unit stay for these patients. Empiric antimicrobials and racemic epinephrine should be initiated as well.

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Research Concepts:

Moh'd Terkawi

Epiglottitis




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Question 643: A 30-year-old woman delivers a baby with multiple congenital malformations, including microcephaly, ventriculomegaly, and clubfoot. Ophthalmologic examination of the newborn shows chorioretinal atrophy of the macula. The mother admits to a history of fever, headache, pruritic rash, and conjunctivitis, which lasted for ten days during her first trimester. The symptoms started shortly after a trip to Brazil. Which of the following viruses is the most likely cause of this newborn's presentation?

Choices:

1. Rubella virus
2. Cytomegalovirus
3. Zika virus
4. Ebola virus

Moh'd Terbi

Answer: 3 - Zika virus

Explanations:

- Congenital infection with Zika virus, rubella virus, varicella-zoster virus, cytomegalovirus, and Toxoplasma gondii can cause chorioretinal atrophy.
- Zika virus is a neurotropic virus that can cross the placenta and infect the fetus.
- Classic findings include microcephaly, ventriculomegaly, cerebellar hypoplasia, lissencephaly with hydrocephalus, and fetal akinesia deformation sequence called arthrogryposis. Infants infected with the Zika virus have vision-threatening fundus abnormalities like chorioretinal atrophy, focal pigmentary changes, and optic nerve abnormalities.
- The diagnosis is confirmed by detecting Zika RNA using reverse transcription-polymerase chain reaction (RT-PCR).

Moh'd Terbi

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Research Concepts:

Chorioretinitis




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Question 644: An 8-year-old boy falls while playing soccerball.

Because a readily performed radiological examination reveals a wrist fracture, the child undergoes a surgical treatment. A few days after the operation, the little patient reports neurological symptomatology featuring in numbness and tingling sensation over the lateral 3/4th of the right palm and fingers. What could be the cause of this neurological symptomatology?

Choices:

1. Ulnar nerve injury
2. Median nerve injury
3. Radial nerve injury
4. Axillary nerve injury

Moh'd Terbi

Answer: 2 - Median nerve injury

Explanations:

- Median nerve injury could result from compartment syndrome or carpal tunnel syndrome (CTS).
- Overuse of the hands can cause CTS and rest is often advised.
- When the median nerve is compressed at the wrist, the individual will have weakness in abduction and opposition of the thumb.
- The paresthesias may occur in the lateral 3 1/2 digits including the nailbeds. Initially, the treatment of carpal tunnel syndrome is to stop the activity causing symptoms and wearing a splint.

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Moh'd Terbi

Research Concepts:

Median Nerve Injury




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Question 645: A 9-year-old girl presents to the clinic with a 2-day history of easy bruising, petechiae, purpura, and some nosebleeds. She had her first dose of the MMR vaccine 4 weeks ago. What is the next best step in the management of this patient?

Choices:

1. Wait until resolution of symptoms and order serological testing for immunity
2. Administer the second dose after the resolution of symptoms
3. Stop the vaccination process
4. Administer the second dose of the vaccine

Moh'd Terbi

Answer: 1 - Wait until resolution of symptoms and order serological testing for immunity

Explanations:

- This patient is presenting with symptoms suggestive of immune thrombocytopenic purpura.
- Immune thrombocytopenic purpura is a rare complication of the MMR vaccine.
- Serological testing should be ordered after the resolution of symptoms.
- The second dose should only be given if serological testing is negative and benefits outweigh risks.

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Moh'd Terbi

Research Concepts:

MMR Vaccine




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Question 646: A 2-day-old boy born at home via an uncomplicated spontaneous vaginal delivery is brought to the clinic with a facial malformation as his lip and mouth have not correctly fused. Physical examination of the neonate reveals a split in the upper lip and roof of his mouth. The surgeon, after assessment and evaluation, recommends surgery for the defects. Which of the following is the most appropriate time to perform the initial surgery for this neonate?

Choices:

1. At three months of age
2. At six months of age
3. At nine months of age
4. At 12 months of age

Moh'd Terbi

Answer: 1 - At three months of age

Explanations:

- Definitive management of cleft palate is achieved by surgical intervention. Repair is often staged, with the lip managed first, followed by the palate. The timing of the first surgical intervention is based on the often-quoted rule of tens: "10 pounds, hemoglobin of 10, and age more than 10 weeks."
- There are several techniques for surgical repair of the cleft lip and palate. The most commonly utilized repairs of the lip are the Millard rotation-advancement technique for unilateral cleft lip and the Mulliken technique for bilateral. Palatoplasty for cleft palate associated with cleft lip and for cleft palate alone is performed later, at 9 to 15 months of age.
- The goal of surgery is to reapproximate or realign the palatal muscles. Upon completion of the surgery, this can help expedite the development of normal speech and sound. Further, cleft palate repair with repositioning of muscles can improve the functioning of the eustachian tube and hearing.
- When the palatal muscles are repositioned properly, this maneuver can improve middle ear ventilation and decrease episodes of otitis media and hearing defects.

Mohit Tariq

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Research Concepts:

Cleft Palate



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Moh'd Terbi

Question 647: A 17-year-old female patient presents to the office with complaints of abdominal cramps, flatulence, and diarrhea for the past ten days. She has had two episodes of fatty, foul-smelling loose stools per day and reports that they are difficult to flush. She has no other medical problems and takes no medication. A month ago, the patient went on a picnic close to a mountain stream. She does not smoke but admits to drinking alcohol on weekends and at parties. Vital signs show a blood pressure of 110/75 mm Hg, a pulse of 86/min, a respiratory rate of 13/min, and a temperature of 98.6 F (37 C). Physical examination shows no abnormalities. Stool testing yields a diagnosis. What is the most appropriate medication for this patient's illness?

Choices:

1. Metronidazole
2. Ciprofloxacin
3. Albendazole
4. Ceftriaxone

Moh'd Terbi

Answer: 1 - Metronidazole

Explanations:

- The most likely diagnosis is Giardia lamblia enteritis. Giardia causes watery diarrhea.
- The parasite is found in lakes, rivers, water streams, and even filtered water. In areas of the world where sanitation is poor, giardia is endemic.
- Metronidazole is used for the treatment. However, reinfection is possible after treatment with metronidazole. She should also be cautioned not to use alcohol while taking the drug.
- Another course of the same antibiotic, a course of a different antibiotic from the same class, or a combination of two antibiotics from separate classes may be prescribed.

Mohd Terbi

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Research Concepts:

Giardia Lamblia Enteritis




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Question 648: A 17-year-old patient had been intubated and managed in mechanical ventilation for neurogenic pulmonary edema resulting from a severe head injury. The patient has now shown good neurological improvement, with his motor score improving to 5. The chest x-ray also showed good improvement from that of the previous glass ground appearance. The treating clinician now wants to plan for the extubation of the patient. Which of the following is the best indicator for prognosticating successful extubation in the patient?

Choices:

1. Positive end-expiratory pressure (PEEP) 8
2. Intracranial pressure (ICP) 20
3. Rapid shallow breathing index (RSBI) 105
4. Normal arterial blood gas (ABG) analysis

Moh'd Terbi

Answer: 3 - Rapid shallow breathing index (RSBI) 105

Explanations:

- Rapid shallow breathing index (RSBI) is the ratio of the spontaneous breathing frequency (per minute) and the average tidal volume (liters) of the patient. It should ideally be taken at least three minutes after discontinuing the patient from ventilatory support.
- RSBI of 105 breaths/min/L is taken now as one of the best predictors for prognosticating safe and successful extubation in an intubated patient.
- A meta-analysis study has shown that the sensitivity of the RSBI in successful extubation in intubated patients was as high as 90%.
- A motor score of five is also a reliable indicator for predicting safe extubation, and there is no need for monitoring intracranial pressure in each patient. The normal arterial blood gas analysis is only one of the indicators in the daily assessment of liberation potential.

Mohsen Terbi

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Research Concepts:

Extubation




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Question 649: A 5-year-old boy presented to the emergency department after the eraser on a pencil broke off in his ear canal. Using a right-angle hook, the eraser is successfully removed, but on assessment afterward, a superficial, small laceration is noted in the ear canal, which is bleeding slowly. He was sent home with instructions to keep the canal clean and dry. He presents three days later to your office complaining of intermittent bloody otorrhea and ear tenderness, though no hearing changes. Otoscopy reveals a small amount of granulation tissue at the laceration site, but an otherwise normal ear exam. What is the next best step in management?

Choices:

1. Antibiotic/steroid combination ototopical drops
2. Reassurance, and instructions to keep the ear canal dry
3. Referral to an otolaryngologist for possible repair
4. Oral antibiotics

Moh'd Terbi

Answer: 1 - Antibiotic/steroid combination ototopical drops

Explanations:

- Excoriations and minor lacerations of the external auditory canal resulting from the initial placement or removal of a foreign body and tend to heal rapidly without antibiotics as long as the ear canal is kept dry.
- Persistent bloody otorrhea is most commonly a result of granulation tissue as a part of the healing process. This is best treated with a combination of steroid/anti-pseudomonal ototopical drops.
- Referral to otolaryngology is appropriate in cases of severe trauma or tympanic membrane perforation. Still, such granulation tissue response (that does not meet the criteria for malignant otitis externa) can be managed with ototopical treatment.
- Should this treatment fail, it will be necessary to refer this patient to an otolaryngologist.

Mich'd Terbi

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Research Concepts:

Ear Foreign Body Removal




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Question 650: An 18-year-old football player presents to the emergency department (ED) with complaints of nausea after a training session at high heat. His coach was concerned because he was very warm to the touch and was sweating profusely. A couple of minutes after arrival at the ED, the patient has an episode of vomiting. His uniform and padding are quickly removed as he is laid down on a stretcher. His vital signs demonstrated a core temperature of 102 C, heart rate of 118 beats/minute, blood pressure of 119/82 mmHg, and breathing at a rate of 22 breaths/minute. His point-of-care glucose was 80 mg/dL, and his skin remains very sweaty. Which of the following is the most appropriate treatment to initiate at this time?

Choices:

1. Acetaminophen
2. IV fluids with normal saline
3. Mechanical cooling with a fan
4. Intravenous 50% dextrose

Mohʼd Terbi

Answer: 2 - IV fluids with normal saline

Explanations:

- IV fluids with normal saline is the most appropriate treatment for someone suffering from heat exhaustion, especially if they are complaining of nausea or have been experiencing vomiting.
- The patient has heat exhaustion, and there is no role for antipyretics in the treatment of heat illness.
- Cooling with mechanical ventilation can be helpful but, as a form of forced convection cooling, is more effective when coupled with an evaporative strategy.
- Although there may be concomitant hypoglycemia with heat illnesses, his blood sugar levels are normal, so the most appropriate treatment should be to start rehydration as soon as possible.

Mohd Terbi

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Research Concepts:

Heat Illness




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Question 651: A full-term newborn develops respiratory distress immediately after birth. The prenatal sonogram was unremarkable. There are substernal retractions and a scaphoid abdomen. Intubation is needed. Arterial blood gas results are pH 7.23, P02 60, and PCO2 52. The radiograph shows air-fluid levels in the thoracic cavity. What is the correct statement?

Choices:

1. There is acute respiratory distress syndrome due to traumatic delivery
2. Immediate exploration and repair of the defect is required
3. Size of defect does not correlate with severity of symptoms
4. Any abdominal organ may be involved in the pathology

Moh'd Terbi

Answer: 4 - Any abdominal organ may be involved in the pathology

Explanations:

- This neonate has a congenital diaphragmatic hernia.
- Embryologic diaphragm fusion usually occurs between the eighth and twelfth weeks of development.
- A sonogram may not show the condition if the abdominal contents had returned during the study. Any abdominal organ can be involved.
- The condition can cause pulmonary hypoplasia, pulmonary hypertension, and neonatal respiratory distress. Initial treatment is medical with extracorporeal membrane oxygenation (ECMO).

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Moh'd Terbi

Research Concepts:

Congenital Diaphragmatic Hernia




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Question 652:

A 14-year-old male patient presents to the hospital for the evaluation of nausea, vomiting, and generalized itching. He is currently on chemotherapy started for acute leukemia. Vital signs are pulse rate 90/min, blood pressure 110/65 mmHg, respiratory rate 18/min, and temperature 98.6 F (37 C). Physical examination reveals muffled heart sounds with bilateral pitting edema. Lab reveals sodium 135 mEq/L, potassium 5.5 mEq/L, calcium 7.5 mg/dL, creatinine 1.7 mg/dL, and uric acid 9.0 mg/dL. What is the most appropriate medication to treat the underlying cause of illness in this patient?

Choices:

1. Probenecid
2. Furosemide
3. Rasburicase
4. Colchicine

Moh'd Terbi

Answer: 3 - Rasburicase

Explanations:

- Rasburicase is a new medication for the prevention and treatment of tumor lysis syndrome in patients receiving chemotherapy for hematologic malignancies like lymphomas and leukemias.
- For a patient with a high-risk tumor, the overall consensus is to start on prophylactic urate oxidase inhibitor therapy before the initiation of chemotherapy. It is advisable to start rasburicase for hyperuricemia.
- Rasburicase catalyzes the metabolism of uric acid to allantoin. Allantoin is an inactive metabolite of purine metabolism and is ten times more soluble than uric acid. Therefore, it is more rapidly excreted by the kidneys.
- The drug metabolizes uric acid into hydrogen peroxide, a potent oxidizing agent that can cause severe methemoglobinemia or hemolytic anemia in patients with glucose 6 phosphate dehydrogenase (G6PD) deficiency. It is contraindicated in patients with G6PD deficiency.

Monica Tellez

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Research Concepts:

Tumor Lysis Syndrome




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improvement.

Moh'd Terbi

Question 653: A neonate is diagnosed with HSV skin, eye, mucous membrane disease confirmed by viral culture of a skin lesion, and completes 14 days of intravenous acyclovir. The evaluation of his cerebrospinal fluid was negative for HSV (herpes simplex virus). Neuroimaging, ophthalmologic, and audiology examinations are all normal. His mother is concerned about recurrences and other long term sequelae. What is the best treatment recommendation that you can make to the mother to prevent further progression of HSV disease?

Choices:

1. Infants should receive acyclovir suppression is 60 mg/kg per day in 3 divided doses (20 mg/kg per dose) given intravenously for 14 days
2. Infants should receive oral acyclovir suppression at 300 mg/m2 per dose, administered three times daily for six months
3. Infants should receive oral valganciclovir at 100 mg/m2 per day for three months
4. Infants should receive ganciclovir 10 mg/kg/dose three times daily for six months

Med'd Terbi

Answer: 2 - Infants should receive oral acyclovir suppression at 300 mg/m2 per dose, administered three times daily for six months

Explanations:

- Suppressive oral acyclovir will decrease the risk of recurrences and improve neurodevelopmental outcomes for infants with neonatal HSV.
- Suppressive therapy can be delivered orally versus treatment doses which must be delivered intravenously.
- Approximately 50% of infants surviving neonatal HSV experience cutaneous recurrences, with the first skin recurrence often occurring within 1 to 2 weeks of stopping parenteral acyclovir treatment without prophylaxis.
- Valganciclovir can be used to suppress recurrences of genital HSV lesions in adults.

Mohd Terbi

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Research Concepts:

Congenital Herpes Simplex




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Question 654: A patient with Addison disease is started on hydrocortisone 25 mg by mouth daily. What dosage adjustments may be necessary?

Choices:

1. The dosage may need to be decreased if the patient eats certain foods
2. The dosage may need to be increased if there is an infection
3. The dosage may need to be decreased if the patient gains weight
4. The dosage may need to be increased if the patient loses weight

Moh'd Terbi

Answer: 2 - The dosage may need to be increased if there is an infection

Explanations:

- Patients with Addison disease are unable to produce adequate amounts of corticosteroids.
- Oral replacement of glucocorticoid is usually adequate in the absence of stress.
- Doses need to be increased at times of stress including infections, surgery, or major illness to adjust to the stress.
- If oral medication is not tolerated, injectable hydrocortisone is required.

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Moh'd Terbi

Research Concepts:

Addison Disease




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Question 655: A 2-year-old boy is brought to the clinic by his parents due to the concerns of developmental delay. He is not able to walk without support or hold his head. Parents also noticed constant head-nodding and occasional noisy breathing. On examination, there is significant spasticity in the lower limbs. Stroking both foot soles results in fanning of the toes. The family history is negative for similar presentations. An MRI reveals significantly reduced white matter and increased T2-signal intensity. A mutation of which of the following chromosomes is most likely responsible for the patient's condition?

Choices:

1. 9
2. 5
3. X
4. 17

Moh'd Terbi

Answer: 3 - X

Explanations:

- The clinical picture presented in the vignette including the history provided by the parents, clinical examination, and MRI findings, is suggestive of Pelizaeus-Merzbacher disease (PMD). PMD involves mutation of the proteolipid protein 1 gene (PLP1) located on the long arm of chromosome X. It is an X-linked recessive disorder.
- PMD can present with varying severity depending on the location and type of PLP1 mutation. The most severe type, known as the connatal form, is evident as soon as 1-2 weeks postnatally when nystagmus and stridor are observed.
- Patients present with severe spasticity and a positive Babinski sign. The MRI in PMD reveals a significant reduction of white matter, demyelination of brain structures, and increased intensity on T2 imaging.
- A mutation at the level of the TSC1 gene located on chromosome 9 causes tuberous sclerosis, whereas a genetic deletion at the level of the short arm of chromosome 5 is responsible for the cri-du-chat syndrome. NF1 gene mutation on chromosome 17 is responsible for type 1 neurofibromatosis.

Mon'd Terki

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Research Concepts:

Pelizaeus-Merzbacher Disease



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Moh'd Terbi

Question 656: A male neonate born at 30 weeks undergoes a screening brain ultrasound. It reveals the presence of grade 1 germinal matrix hemorrhage in the right periventricular region. The subsequent MRI confirms the diagnosis of hemorrhage but also detects the presence of a cavity of the midline with a triangular shape with the wide base dorsally and the apex pointing anteriorly reaching as far forward as the foramen of Monroe. What is the most likely diagnosis?

Choices:

1. Cavum septi pellucidi (CSP)
2. Cavum vergae
3. Pineal cyst
4. Cavum veli interpositi

Moh'd Terbi

Answer: 4 - Cavum veli interpositi

Explanations:

- The cavum septi pellucidi (CSP) has the same triangular shape of CVI but with the apex pointing posteriorly.
- CSP is located anterior to the foramen of Monro, between the frontal horns of the lateral ventricles.
- The cavum vergae usually has a rectangular shape in cross-section. It is located superior to the columns of the fornices, which are displaced inferiorly.
- A pineal cyst is common, usually asymptomatic, and incidentally finding as for CVI. The pineal cyst is located below the internal cerebral veins abutting the colliculi. The cavum veli interpositi CVI has a triangular shape with the wide base dorsally and the apex pointing anteriorly, reaching as far forward as the foramen of Monroe.

Moh'd Terbi

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Research Concepts:

Cavum Veli Interpositi




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Question 657: A 3-week-old boy is brought in for evaluation of yellowish discoloration of his skin and clay-colored stools. He was born at 39 weeks gestation to a gravida 3 now para 3 mother after an uncomplicated pregnancy. Her prenatal labs were within normal limits, and her blood is A positive and antibody negative. The mother noticed yellowish discoloration of her son's skin seven days ago, and since then, it has gradually worsened. She has also noticed that his urine is very dark and stains his diaper. Blood work shows direct bilirubin of 8 mg/dL and total bilirubin of 16 mg/dL. Hepatic ultrasound shows an empty gall bladder. Given the likely diagnosis, which of the following best describes this neonate's condition?

Choices:

1. Liver transplantation offers the only cure for this condition.
2. Prognosis is greatly improved if surgery is done within six months of age.
3. For the best outcome, surgery should be done before 60 days of life.
4. The recurrence risk of this condition in a subsequent pregnancy is 25%.

Moh'd Terih

Answer: 3 - For the best outcome, surgery should be done before 60 days of life.

Explanations:

- The patient in this vignette most likely has biliary atresia, which presents with conjugated (direct) hyperbilirubinemia in the neonatal period.
- Affected patients also present with other signs of cholestasis, including clay-colored stools and dark urine. The etiology of biliary atresia is not fully understood and is probably multifactorial.
- Hepatic ultrasound may show empty gall bladder and classical "triangular cord signs," which, if present, is 100% specific. Confirmatory diagnosis is typically made on liver biopsy.
- Kasai operation (hepatic portoenterostomy) is the treatment of choice. For the best outcome, surgery should be done before 60 days of life.

Mohd Terbi

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Research Concepts:

Neonatal Jaundice




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Question 658: A 3-year-old boy presents to the healthcare provider with a swollen right knee and a fever. His vital signs are blood pressure of 110/65 mmHg, a temperature of 100.7 F, and pulse of 86/min, and a respiratory rate of 25/min. Physical exam notes a swollen, red right knee which is painful when palpitated. The patient had a hematopoietic stem cell transplant 3 months ago and the clinician suspects a right septic knee joint. A fungal culture grew Fusarium spp. Which of the following is the mechanism of action of the drug of choice for this patient?

Choices:

1. Increased tubulin formation
2. Cellular channel formation
3. Peptidoglycan transpeptidase inhibitor
4. Dihydrofolate reductase inhibitor

Moh'd Terbi

Answer: 2 - Cellular channel formation

Explanations:

- Amphotericin B is an antifungal with a broad-spectrum activity against systemic and invasive fungal infections. It creates channels in the fungal cell, which causes the loss of ions, e.g., potassium.
- Fusariosis is an opportunistic invasive mold infection caused by Fusarium species. It is typically seen in a hematopoietic stem cell transplant.
- Once Fusarium species is isolated from a sterile body site in an immunocompromised host, amphotericin B should be started until susceptibilities are available.
- Alternative regimens include voriconazole or posaconazole.

Mohd Terbi

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Research Concepts:

Amphotericin B




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Question 659: A 17-year-old boy presents to the office for a routine physical examination. He has a family history of sudden cardiac deaths in his father and grandfather. He had two episodes of syncope while playing basketball. He denies any fever, shortness of breath, leg swelling, and cough. On examination, his vitals are stable. Chest auscultation reveals a systolic murmur on the left sternal border, which increases in intensity while standing while handgrip decreases the intensity of the murmur. ECG shows left ventricular hypertrophy. Which of the following is the most likely drug given for this condition?

Choices:

1. Nitroglycerin
2. Hydrochlorothiazide (HCTZ)
3. Aspirin
4. Verapamil

Moh'd Terbi

Answer: 4 - Verapamil

Explanations:

- This patient is most likely suffering from hypertrophic obstructive cardiomyopathy. He has symptoms of syncope with a family history of sudden cardiac deaths. ECG and murmur findings are most likely suggestive of hypertrophic obstructive cardiomyopathy.
- Beta-blockers are the drug of choice for obstructive cardiomyopathy.
- Verapamil is the best option if patients cannot take beta-blockers.
- Diuretics, like HCTZ, are contraindicated because they decrease cardiac filling. Aspirin has no therapeutic use in obstructive cardiomyopathy.

Mohd Terbi

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Research Concepts:

Hypertrophic Obstructive Cardiomyopathy




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Question 660: A 6-year-old girl is experiencing difficulties with her fine-motor skills, especially while using crayons, pencils, and scissors. She is not able to tie her shoes, dress, or ride a bicycle. Her schoolteacher noticing some of these issues referred the child to an occupational therapist for an evaluation. The child had trouble imitating the reciprocal rhythmic movements of the hands and arms. This suggests that the child may have a poorly integrated nervous system, interfering with motor coordination and the attainment of skills. Which of the following would be the most effective intervention?

Choices:

1. Build a program to take place at home and at school where the child can play dressing toys and use therapy to strengthen hand muscles, play stringing, lacing, and weaving objects
2. Take the child to the park so she can see other children riding bicycles and feel motivated to ride a bike as well.
3. Try using scissors, specific to the size of the child, but stop the intervention if the child has a tantrum because she does not want to do it
4. Prompt the child to socialize during play at school and take her to play dates so she can improve her social skills

Mehdi Terbi

Answer: 1 - Build a program to take place at home and at school where the child can play dressing toys and use therapy to strengthen hand muscles, play stringing, lacing, and weaving objects

Explanations:

- Her aversions to tactile stimuli may have interfered with her ability to manipulate objects leading to decreased development of hand function. Hence an intervention that increases the use of hand muscles could improve her tolerance of manual activities and thus her motor skills.
- Initially offering activities to the child that do not include undesired activities might make the child more willing to participate.
- Stringing, lacing, and weaving objects may lead to improvements in fine-muscle movements and also provide tactile input.
- Providing the child with different tactile experiences, thus facilitating awareness of her hands and offering an opportunity for the sensory basis of fine motor planning.

Mehri Teribi

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Research Concepts:

Sensory Integration




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Question 661: A 2-week-old girl is brought to the clinic by her parents for a follow-up. She was born at 37 weeks gestation by cesarean section at a birth weight of 4100 grams. She was mildly hypotonic at birth and 4 hours later developed severe hypoglycemia that required IV dextrose. Her mother reports that her daughter has been exclusively breastfeeding and has had some difficulties with latching. Her growth parameters are in the 95th percentile for weight and length and in the 40th percentile for head circumference. On physical examination, the patient has a large protruding tongue, an umbilical hernia, and left hemihyperplasia. The rest of the physical exam, including vital signs, is within normal limits. Which of the following is most likely to be present in this patient?

Choices:

1. Difficulty with endotracheal intubation
2. Myoclonic seizures
3. Progressive muscular weakness
4. Hydrocephalus and ataxia

Mohamed Terbi

Answer: 1 - Difficulty with endotracheal intubation

Explanations:

- Macrosomia, macroglossia, and abdominal wall defects (e.g., omphalocele) are the most common features in patients with Beckwith-Wiedemann syndrome (BWS). Macroglossia is found in approximately 95% of these patients.
- Patients with macroglossia and abdominal wall defects often need corrective surgery, and management of the airway can be challenging. Macroglossia can cause difficult ventilation, intubation, and extubation.
- Preoperative assessment and preparations for difficult airway should be considered in the assessment of these patients.
- Although hypotonia may be present at birth, the neuropsychomotor development of BWS children is usually normal.

Moh'd Terbi

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Research Concepts:

Beckwith Wiedemann Syndrome




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Question 662: An 8-year-old boy was brought in by his mother due to concerns regarding poor grades. During preschool, he received speech therapy due to language delay. Now she is concerned because her son has had troubles at school for disruptive behaviors. He enjoys working with numbers but doesn't like reading and writing assignments. When the provider asks him how he is school going, he tells you that it is boring and he doesn't want to go there. The mother refers that his brother is in a special class at school. Which of the following is the next best step in managing this patient?

Choices:

1. Completion of the behavioral rating scale by the parents
2. Discuss with the child's teacher regarding modifying his homework
3. Evaluate the child's learning profile
4. Place him in a special education class

Wahid Terbi

Answer: 3 - Evaluate the child's learning profile

Explanations:

- This child needs evaluation for learning disability profile as the next best to help identify any learning disabilities and to determine any eligibility for special education services.
- When academic underachievement is present, it is recommended a psycho-educational evaluation. This assessment should be submitted to the school by the parents in writing.
- According to the IDEA (Individuals with Disabilities Education Act), the child should be educated in a typical educational setting along with children without disabilities as much as possible. These services should be given in the least restrictive environment.
- Students with weakness in reading may struggle in school when academic demands increase (having a switch from "learning to read" to "reading to learn").

Monir Terbi

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Research Concepts:

Learning Disability




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Question 663: A 14-year-old girl comes with her mom for a chief complaint of poor posture and back pain. A plain film shows significant scoliosis with a 50% degree of curvature. She also complains of getting short of breath while taking the bus in the morning. Her temperature is 97.3 F (36.2 C), respiratory rate 20/min, blood pressure 90/45 mmHg, SpO2 90%. What are the most likely findings on spirometry?

Choices:

1. Obstructive lung disease with increased total lung capacity, increased residual volume, and normal tidal volume
2. Restrictive lung disease with decreased total lung capacity, decreased vital capacity, normal residual volume
3. Obstructive lung disease with decreased total lung capacity, decreased vital capacity, normal residual volume
4. Restrictive lung disease with increased total lung capacity, increased residual volume, and normal tidal volume

Mona Terbi

Answer: 2 - Restrictive lung disease with decreased total lung capacity, decreased vital capacity, normal residual volume

Explanations:

- Scoliosis causes a restrictive lung pattern. As the degree of scoliosis increases, it can affect the heart and lungs.
- Restrictive lung patterns show a decrease in lung volumes and capacities. There is a decreased total lung capacity, decreased vital capacity, normal residual volume.
- Restrictive patterns are identified with a total lung capacity below 5th percentile of predicted value and a normal FEV1/FVC.
- Obstructive lung disease has an increased total lung capacity, increased residual volume, and normal tidal volume.

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Moh'd Terbi

Research Concepts:

Spirometry




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Question 664: A 17-year-old female presents to the local urgent care for a sore throat. What pediatric age group has the highest incidence of pharyngitis caused by Arcanobacterium haemolyticum?

Choices:

1. Neonates
2. School-age
3. Infant
4. Adolescents

Moh'd Terbi

Answer: 4 - Adolescents

Explanations:

- The highest incidence of Arcanobaterium haemolyticum pharyngitis occurs in teen and young adults.
- Strep pharyngitis is much more common in the first decade of life than Arcanobacterium haemolyticum.
- A. haemolyticum pharyngitis is not common in patients less than 15 years old.
- The highest incidence of Arcanobacterium haemolyticum pharyngitis is 15 to 18 years old.

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Moh'd Tenji

Research Concepts:

Arcanobacterium Haemolyticum




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Question 665: A 16-year old boy who is suffering from short bowel syndrome is admitted with a suspicion of central venous catheter infection. He is admitted to the children's hospital with a fever of 104 F (40 C). He is also known to be colonized with methicillin-resistant Staphylococcus aureus (MRSA) and treated for multidrug-resistant bacterial infections in the past. A central line infection is strongly suspected. Appropriate therapy should now include which of the following?

Choices:

1. Linezolid
2. Meropenem
3. Clindamycin
4. Clofazimine

Moh'd Terbi

Answer: 1 - Linezolid

Explanations:

- Linezolid represents a new class of antimicrobial agents called the oxazolidinones that bind to the 50S ribosomal subunit and inhibit protein synthesis.
- Linezolid is active against MRSA, vancomycin-resistant Enterococci (VRE), and penicillin-resistant S. pneumoniae.
- Linezolid is particularly more active against gram-positive bacteria. It can be administered IV or orally.
- Common side effects include diarrhea, vomiting, and change in taste perception.

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Moh'd Terbi

Research Concepts:

Vancomycin-Resistant Enterococci




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Question 666: An 18-month-old male presents to the clinic for a well visit. He received his first hepatitis A vaccination on schedule six months ago, but he was ill when it was time for his next dose. His mother is concerned about him receiving the hepatitis A vaccine and his other 18-month-old vaccines together. What advice should you give her regarding hepatitis A vaccination?

Choices:

1. Wait on the hepatitis A vaccine as the 18-month-old vaccinations cannot be given at the same appointment
2. The hepatitis A vaccine and his other 18-month-old vaccines can be given at the same appointment
3. A second hepatitis A vaccination is not needed because 95% of people will develop anti-HAV within one month of their primary immunization
4. Her son is outside the window for the second vaccination and will have to restart the hepatitis A vaccination series

Mona Terbi

Answer: 2 - The hepatitis A vaccine and his other 18-month-old vaccines can be given at the same appointment

Explanations:

- Only inactivated hepatitis A vaccines are licensed for use in the United States.
- The hepatitis A vaccine is given by intramuscular injection into the deltoid muscle on a two-dose schedule. The first dose is given between 12 and 23 months of age. The interval between the first (primary) dose and the second (booster) dose usually is at 6 to 18 months of age.
- Vaccination providers should administer vaccines as close to the recommended intervals as possible. An interruption in the vaccination schedule does not require restarting the entire hepatitis A vaccination series or the addition of extra doses.
- Only written, dated records should be accepted as evidence of vaccination. If records cannot be located within a reasonable time, immunization should be started on the patient's age-appropriate vaccination schedule or have serologic testing performed to determine immunity.

Mona Terhi

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Research Concepts:

Hepatitis A Vaccine




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improvement.

Moh'd Terbi

Question 667: A 12-year-old right-handed obese female is brought to the outpatient department for the evaluation of headaches for the past three years. Her headaches are getting worse for the past six months. Upon further questioning, she reports that headache is unilateral, pulsatile in nature, associated with severe nausea and vomiting, and usually lasts 6 hours on average. Her physical examination is unremarkable, and her BMI is 31 kg/m2. What would be the most appropriate treatment for this patient?

Choices:

1. Topiramate
2. Calcium channel blockers
3. Botulinum toxin injections
4. Steroid injections nerve blocks

Moh'd Terbi

Answer: 1 - Topiramate

Explanations:

- This patient is most likely suffering from migraines. Topiramate has been tested in the pediatric population, and the results are favorable when it comes to safety and reduction in frequency and severity of headaches.
- Obesity worsens headaches, especially migraines, and topiramate tends to curb appetite and cause some weight loss as a side effect. Still, it is favorable when it is given for patients with obesity and headaches.
- Topiramate can also cause kidney stone, tingling, numbness, word-finding difficulty, it is important to talk with parents on school performance and other symptoms if they notice anything new on their child.
- A family history of kidney stones is not a contraindication for topiramate for patients with migraine. However, it is important to educate them on this possibility and to stay hydrated while being on it.

Mehdi Terbi

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Research Concepts:

Migraine Headache In Childhood




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Question 668: A 3-year-old boy is brought to the provider by his parents because they are concerned about his behavior. He has poor social and language development. He only knows 7 to 8 words, communicates by pointing, and does not use 2-word combinations. He also does not socialize with his peers and only plays by himself. Another concerning feature for the parents is that their child does not maintain eye contact. What is the most appropriate next step for the evaluation of this patient?

Choices:

1. Childhood Autism Spectrum Test
2. Magnetic resonance imaging (MRI) brain
3. Electroencephalography (EEG)
4. Hearing test

Moh'd Terbi

Answer: 4 - Hearing test

Explanations:

- All patients with autism spectrum disorder (ASD) should have a thorough medical assessment, including standard psychiatric assessment, physical examination, hearing screening, eye examination for signs of tuberous sclerosis, and genetic testing.
- Autism spectrum disorder is a heterogeneous disorder with a wide variety of clinical manifestations, ranging from slight to significant impairment, and is characterized by abnormal social communication and social interaction; and restricted and repetitive patterns of behavior.
- Poorly integrated verbal and nonverbal communication, abnormal eye contact, body language, and facial expressions are common among patients with autism.
- MRI and EEG are not recommended for routine assessment of ASD. However, they may be indicated in the presence of certain conditions such as atypical regression, micro- or macrocephaly, seizures, or abnormal neurologic examination. Childhood Autism Spectrum Test (CAST) is a tool to screen children aged between 5 and 11 years who are suspected of having autism spectrum disorder.

Mohsen Tehrani

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Research Concepts:

Asperger Syndrome



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Moh'd Terbi

Question 669: A 27-day-old infant born at 36 weeks of gestation is brought by his parents to the pediatric clinic with a complaint of shortness of breath, poor growth, and a mild fever. Physical examination revealed continuous, “machinery” murmur below the clavicle, radiating to the back and prominent precordial impulse, tachycardia, and bounding peripheral pulse. It has been planned to treat him with indomethacin. Which of the following finding is of greatest concern in such patients?

Choices:

1. Bleeding from prior heel pricks
2. Capillary refill of fewer than 2 seconds
3. Presence of a faint murmur that sounds machinery-like, which is unchanged from previous assessment
4. Respiratory rate of 40 breaths per minute and heart rate of 130 beats per minute

Wloh'd Terbi

Answer: 1 - Bleeding from prior heel pricks

Explanations:

- The presence of continuous, “machinery” murmur, prominent precordial impulse, tachycardia, and bounding peripheral pulse in a preterm born child are suggestive of patent ductus arteriosus.
- Bleeding from prior heel prick sites should be reported to the clinician immediately. Indomethacin is a non-steroidal anti-inflammatory agent used as an alternative to surgery for patients with a patent ductus arteriosus.
- Indomethacin inhibits platelet function. Therefore, the clinician should observe for bleeding.
- A heart rate of 130 beats per minute is within normal limits (120 to 160) for an infant. The presence of a faint machinery-like murmur is typical of a patent ductus arteriosus. A respiratory rate of 40 breaths per minute is within reasonable limits (30 to 50) for an infant. A capillary refill of fewer than 2 seconds indicates good peripheral perfusion and a low probability of congestive heart failure.

Michael Terry

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Research Concepts:

Patent Ductus Arteriosus




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improvement.

Moh'd Terbi

Question 670: A toddler has swallowed a coin. She is drooling, refuses to drink, and seems uncomfortable, but is breathing comfortably. Imaging reveals the coin in the upper esophagus. What is the most appropriate next step in caring for this child?

Choices:

1. Inducing vomiting, such as with syrup of ipecac
2. Administration of glucagon or diazepam for muscle relaxation
3. Urgent referral to a specialist in pediatric endoscopy
4. Alternating back blows and chest thrusts

Moh'd Terbi

Answer: 3 - Urgent referral to a specialist in pediatric endoscopy

Explanations:

- Medication administration is rarely successful in removing a foreign body from a child's esophagus.
- Inducing vomiting can place the patient at risk for aspiration and acute respiratory failure.
- Back blows and chest thrusts are recommended as part of basic life support only for the management of acute airway obstruction.
- Although other methods, including bougienage and use of a balloon catheter, may be considered to remove individual esophageal coins, endoscopy is widely used to remove esophageal coins, especially in children who are symptomatic like this patient. This should be performed by a skilled endoscopist, such as a pediatric gastroenterologist, surgeon, or otolaryngologist.

Moh'd Terbi

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Research Concepts:

Pediatric Foreign Body Ingestion




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Question 671: A 15-year-old boy tried to commit suicide by ingesting tricyclic antidepressant (TCA) medication. What is the most common cause of death following TCA ingestion?

Choices:

1. Respiratory depression
2. Arrhythmia
3. Liver failure
4. Renal failure

Moh'd Terbi

Answer: 2 - Arrhythmia

Explanations:

- TCAs are frequent causes of accidental overdose, especially in children.
- The most prominent electrocardiographic manifestation of TCA toxicity is the widening of the QRS.
- Cardiac conduction abnormalities occur because TCAs inhibit the fast sodium channels in the His-Purkinje system as well as the atrial and ventricular myocardium.
- The most common cause of death in such children is arrhythmia.

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Moh'd Terbi

Research Concepts:

Tricyclic Antidepressant Toxicity




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Question 672: A 16-year-old boy is brought to the emergency department due to an inability to move all his limbs while waking up in the morning. He was in a normal state of health and had no illness except a similar episode of weakness a few months back following participation in the marathon. He denies any pain or change in sensation in his limbs. He denies fever, any recent travel, and does not remember any insect bite. Last night, he had a heavy meal at his home and went to bed in a normal state. None of the family members ever had similar episodes of muscle weakness. His vital signs are within normal limits. Cardiovascular, respiratory, and gastrointestinal examinations reveal no abnormality. On neurological examination, muscle strength is decreased, power is 2/5 in all limbs, and knee and ankle reflexes are depressed. His touch, vibration, and proprioception sensations are intact. Laboratory work reveals sodium 142 mEq/L, potassium 1.9 mEq/L, serum urea nitrogen 18 mEq/L, creatinine 0.8 mEq/L, chloride 110 mEq/L, bicarbonate 26 mEq/L, creatine kinase 1122 U/L. ECG shows a depressed ST-segment and tall T waves. Which of the following tests is most likely to confirm the diagnosis in this patient?

Michel Terbi

Choices:

1. Stool culture for toxin
2. MRI of spinal cord
3. Nerve conduction velocity
4. Electromyography

Answer: 4 - Electromyography

Explanations:

- Sudden onset of generalized flaccid paralysis in a young male patient with a past medical history of similar episodes with hypotonia and depressed deep tendon reflexes without changes in the sensation in the setting of hypokalemia strongly leads to suspicion of the hypokalemic periodic paralysis. The carbohydrate load, because of a heavy meal a night before the onset of weakness, is the likely triggering factor in this patient. Also, prolonged rest after the strenuous exercise, most likely marathon in this patient, is an identified triggering factor for weakness in hypokalemic periodic paralysis.
- The most likely laboratory abnormality during an attack of muscle weakness in hypokalemic periodic paralysis is hypokalemia. The other electrolytes usually remain normal.
- Genetic testing to identify the mutation is done when the pretest probability of hypokalemic periodic paralysis is high. When genetic testing comes negative, tests like electromyography and exercise tests are used.
- Electromyography during an attack of muscle weakness shows the reduced amplitude of CAMP and electrical silencing. Nerve conduction velocity remains normal as peripheral nerves are not involved. MRI of the spinal cord is normal as it remains normal in hypokalemic periodic paralysis. Stool culture for toxin is positive in botulism, which is another possible cause of flaccid paralysis.

Mehdi Tehrani

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Research Concepts:

Hypokalemic Periodic Paralysis

StatPearls Knowledge Base

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Moh'd Terbi

Question 673: A 2-month-old infant is brought to the clinic for follow-up. The patient was last evaluated at 3 days of age when the patient was admitted to the neonatal intensive care unit for management of hypoglycemia. At that time, the patient was found to have a 'U' shaped posture on horizontal suspension. The patient was born at 40 weeks gestation to a 35-year-old mother who had poorly controlled gestational diabetes mellitus. APGAR scores were 7 and 8 at 1 and 5 minutes of life, respectively. Complete blood count, basic metabolic profile, and creatine kinase are within normal limits for the age. Magnetic resonance imaging was done when the patient was in the neonatal intensive care unit, and it showed relative undermyelination. At today's visit, the mother reports that the patient has been feeding well, is able to lift his head and chest when in a prone position, and often smiles. Head circumference at birth was 35.3 cm, and today it is 37.5 cm. On examination, the patient appears alert and is moving all extremities. On vertical suspension, the patient does not slip through, and on the pull to sit maneuver, there is flexion of the upper extremities with a mild head lag. What is the best next step in the management of this patient?

Mona Terbi

Choices:

1. Repeat brain magnetic resonance imaging
2. Follow up in 4-6 weeks
3. Lumbar puncture
4. Chromosome analysis

Answer: 2 - Follow up in 4-6 weeks

Explanations:

- Benign congenital hypotonia is a non-progressive disorder of the neuromuscular system and is a diagnosis of exclusion.
- Muscle tone improves with increasing age but the patient often has delayed milestone achievement.
- Routine blood tests including muscle enzyme results are normal.
- It is associated with joint dislocations later in life and parents must be counseled about it.

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Research Concepts:

Moh'd Terbi

Hypotonia




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Question 674: A 1-year-old boy presented to the pediatrician for her yearly check-up. The mother reports a rapidly enlarging abdominal mass in the right upper quadrant that now measures 7 cm. The pediatrician orders an abdominal ultrasound, MRI, liver function tests, hepatitis panel, and AFP level. The pediatrician will work with an oncologist, radiologist, pediatric surgeon, and hepatologist to plan the clinical course. The next most logical step involves which of the following?

Choices:

1. Watchful waiting
2. Transplant
3. Surgical resection
4. Biopsy

Moh'd Terbi

Answer: 4 - Biopsy

Explanations:

- The next logical step is to perform a biopsy of the mass. This will confirm the diagnosis and allow for the workup to proceed in the correct direction. The differential diagnosis at this point includes hepatoblastoma, hepatocellular carcinoma (HCC), focal nodular hyperplasia, hepatic adenoma, lymphoma, and metastases.
- After the imaging is complete, the staging of the tumor is necessary. Staging is accomplished using the Children's Hepatic Tumors International Collaboration – Hepatoblastoma Stratification and incorporates confirmed prognostic factors from prior risk stratification systems with new additional factors to stratify patients into four risk groups.
- Investigations found to be most predictive of stage are AFP levels, patient age, Pretreatment Extent of Disease (PRETEXT) group (I, II, III, or IV), the presence of metastases, and PRETEXT annotation factor.
- Prognosis is based on numerous factors including age of diagnosis, PRETEXT group, metastases, alfa fetal protein (AFP) levels, histologic subtype, completeness of resection, and clinical stage of the disease.

Mona Terbi

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Research Concepts:

Hepatoblastoma



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Moh'd Terbi

Question 675: A 5-year-old female is brought to the emergency department due to left leg injury. She was playing with her siblings when she bumped into the table and fell. The patient has been crying and experiencing pain since the fall. There is no history of trauma to the head or loss of consciousness. Medical history is notable for two fractures after seemingly minor injuries in the past. Her weight and height are at the 40th percentile for her age. Temperature is 98.3 F, blood pressure is 105/65 mmHg, the pulse is 139/min, and respirations are 19/min. Physical examination reveals a well-appearing, crying child. Her teeth appear yellow-brown, but she otherwise appears well-kept. There is hypermobility of the joints of the hands and feet, and upper extremity strength is 5/5 bilaterally. The left thigh is tender to palpation with deformity and mild ecchymosis. X-ray shows a fracture of the proximal left femur and does not involve the growth plate, which appears normal. What is the underlying pathophysiology of this condition?

Moh'd Terkh

Choices:

1. Abnormal synthesis of type 1 collagen
2. Vitamin D deficiency
3. Abnormal synthesis of type 5 collagen
4. Defective receptors for calcium in the small intestine

Answer: 1 - Abnormal synthesis of type 1 collagen

Explanations:

- The patient presents with a history of fractures over mild injuries, yellow-brown teeth, and hypermobility of joints. The presentation is consistent with osteogenesis imperfecta, an autosomal dominant connective tissue disorder seen due to defective collagen type 1 synthesis.
- The discoloration of teeth to yellow-brown or blue-gray and opalescent is known as dentinogenesis imperfecta, and it is due to loosely attached enamel.
- Important to note that the younger the child presents, the more severe the disease. In the most severe type (lethal/type 2), some patients do not survive the trauma of birth.
- Ehlers-Danlos syndrome, another genetic connective tissue disorder, is caused by defective type V collagen, presents as hypermobile joints (subluxation, dislocation), loose skin but not recurrent fractures.

Mehdi Terbi

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Research Concepts:

Osteogenesis Imperfecta




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Question 676: A 2-weeks-old male neonate delivered by normal vaginal delivery at 40-weeks gestation presents with bilious vomiting and irritability. The delivery was uncomplicated, and Apgar scores were 8 and 9 at 1 and 5 minutes, respectively. Currently, his temperature is 102 Fahrenheit (38.8 C). Physical exam reveals an irritable child with signs of mild dehydration and abdominal distension. Ultrasound shows a fibrous band connecting the cecum to the retroperitoneum. What is the most appropriate next step in management?

Choices:

1. Observation with a nasogastric tube and electrolytes correction
2. Emergent laparotomy
3. Stool culture
4. Barium swallow

Moh'd Terbi

Answer: 2 - Emergent laparotomy

Explanations:

- Midgut malrotation is a developmental defect in the counterclockwise rotation of the small intestine around the superior mesenteric artery (SMA), which causes the displacement of the cecum to the right upper abdominal quarter and obstruction of the duodenum by Ladd's bands. These can be seen on ultrasound, CT, or upper GI studies.
- The process includes a fibrotic band formation from the duodenum to the retroperitoneum known as Ladd's bands pass over the duodenum and connect the cecum to the lateral abdominal wall. The pressure of the bands on the duodenum causes intestinal obstruction, while the short mesentery of the malpositioned cecum causes volvulus. Early diagnosis and surgical repair is the most important factor in this patient to avoid the complication of small bowel necrosis.
- Surgical management includes emergent laparotomy followed by cutting the bands between the cecum and the abdominal wall to release the SMA, plus appendectomy to avoid the need for a displaced and inflamed appendix in the future.
- The medical option is utilized if the patient is clinically stable to allow better surgical outcomes and lower complications rate.

Mom's Tenth

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Research Concepts:

Midgut Malrotation



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Moh'd Terbi

Question 677: A 10-year-old girl is brought to the hospital with a 2-day history of right lower quadrant abdominal pain. Initial labs show a WBC count of 17,000/microL and hemoglobin 14 g/dL. An abdominal ultrasound demonstrates several enlarged hypoechoic mesenteric lymph nodes in the right lower quadrant and a normal-appearing appendix. What is the most appropriate management strategy for this patient?

Choices:

1. Laparotomy
2. Cefazolin
3. Piperacillin/ tazobactam
4. Supportive care

Moh'd Terbi

Answer: 4 - Supportive care

Explanations:

- An abdominal ultrasound demonstrating enlarged hypoechoic mesenteric lymph nodes and a normal-appearing appendix in the setting of right lower quadrant abdominal pain is diagnostic for mesenteric adenitis.
- Mesenteric adenitis is a self-resolving disease process and no treatment is required.
- Mesenteric adenitis does not require antibiotic treatment.
- Acetaminophen may be used in case of fever or pain.

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Moh'd Terbi

Research Concepts:

Mesenteric Adenitis




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Question 678: A female infant on the second day of life is being evaluated for jitteriness, excessive crying, and poor feeding. The mother admits to taking several drugs during pregnancy. Which of the following drugs is most likely to cause these findings in the infant?

Choices:

1. Cocaine
2. Methadone
3. Famotidine
4. Marijuana

Moh'd Terbi

Answer: 2 - Methadone

Explanations:

- Opioids are the most common maternal medications implicated in neonatal drug withdrawal.
- Other drugs that can develop withdrawal symptoms in the newborn are barbiturates, benzodiazepines, amphetamines, antidepressants, and nicotine.
- Cocaine is a vasoconstrictor and can cause placental abruption and neonatal intracranial bleeds.
- Marijuana does not cause withdrawal symptoms in newborns.

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Moh'd Terdi

Research Concepts:

Perinatal Drug Abuse And Neonatal Drug Withdrawal




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Question 679: A 16-year old female presents to the clinic for evaluation. She reports feeling ill with a "flu-like" illness 2 weeks ago. She did not seek medical attention at the time and managed with symptomatic care at home. Eventually, her initial symptoms of high-grade fever and cough resolved. For the last few days, however, she reports feeling ill again. She has intermittent low-grade fevers and worsening fatigue. She also complains of pain in her knees and elbows. Physical examination reveals normal blood pressure with slight tachycardia and a low-grade fever. Skin assessment reveals erythematous lesions with pale centers and serpiginous margins on her arms and chest. Palpable non-tender subcutaneous nodules are present bilaterally on her elbows. Which of the following complications of her disease are most likely to be seen first?

Choices:

1. Pulmonary hypertension
2. Mitral stenosis
3. Mitral regurgitation
4. Right ventricular failure

Moh'd Terbi

Answer: 3 - Mitral regurgitation

Explanations:

- This patient likely has acute rheumatic fever with a history of pharyngitis, most probably due to a streptococcal infection. The earliest complication of carditis associated with this disease is mitral regurgitation.
- Rheumatic carditis begins with valvulitis of the mitral and/or aortic valves with pathologic regurgitation of the affected valves. Approximately 10% of the patients with rheumatic fever develop mitral and/or aortic insufficiency after their first episode. Mitral regurgitation is the most common early valvular manifestation of this disease.
- Most patients with mitral regurgitation are asymptomatic as the severity of acute carditis is not high. Chronic inflammation eventually leads to stiffened leaflets of the mitral valve and causes mitral stenosis.
- Prolonged mitral stenosis with severely elevated left atrial pressures will eventually lead to pulmonary hypertension (type 2) and eventually right ventricular failure.

Mon'd Terh

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Research Concepts:

Mitral Regurgitation




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improvement.

Moh'd Terbi

Question 680: A 15-year-old boy presents to the emergency department with his mother. She reports that 30 minutes ago, the boy fell to the ground and began shaking all 4 extremities. Once he stopped shaking, she tried talking to him, but he was very confused. The patient has a past medical history of aplastic anemia and had a stem cell transplant 2 weeks ago. Physical examination shows confused mentation in addition to tongue lacerations. Thirty minutes later, the boy is more alert and able to answer questions appropriately. EEG shows significant abnormalities. Which of the following medication(s) most likely caused this clinical presentation?

Choices:

1. Cyclosporine alone
2. Cyclosporine, in combination with methylprednisolone
3. Cyclosporine in combination with fluconazole
4. Cyclosporine, in combination with phenytoin

Mon'd Terbi

Answer: 2 - Cyclosporine, in combination with methylprednisolone

Explanations:

- This patient with rhythmic shaking, post-ictal confusion, tongue lacerations, and EEG abnormalities likely had a seizure.
- Due to a recent stem cell transplant, the patient is most likely taking an immunosuppressive agent, such as cyclosporine.
- Cyclosporine is known to have potential neurologic complications, such as seizures, especially in combination with high-dose methylprednisolone.
- Cyclosporine can also affect other systems, such as the renal, cardiovascular, endocrine, hematologic, and immune systems.

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Moh'd Terbi

Research Concepts:

Cyclosporine




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Question 681: A 12-year-old girl with a history of seizures is brought to the clinic for evaluation. She has a genetic mutation at chromosome 9q34. On physical evaluation, she has four reddish-brown lesions on the malar region of the face. For which of the following conditions does the patient have the highest risk?

Choices:

1. Peripheral neuropathy
2. Cataracts
3. Retinal hamartomas
4. Cerebellar hemangiomas

Moh'd Terbi

Answer: 3 - Retinal hamartomas

Explanations:

- This patient has tuberous sclerosis, a neurocutaneous disorder that involves multiple organ systems. Patients commonly present hamartomas involving the eyes, brain, lung, heart, liver, kidneys and skin.
- Tuberous sclerosis is associated with a mutation in either TSC1 or TSC2 genes.
- Retinal hamartomas are the most common ophthalmic manifestation in patients with tuberous sclerosis.
- Other ophthalmic manifestations include chorioretinal depigmentation patches, eyelid angiofibromas, nonparalytic strabismus, colobomas, and sector iris depigmentation.

Mahdi Terbi

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Research Concepts:

Tuberous Sclerosis




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Question 682: A 16-year-old boy comes to the hospital with his mother for the evaluation of lower limb weakness. He finds difficulty in walking and standing from a sitting position for the past 1 year. He denies any recent trauma, travel, rashes, sudden loss of vision, or focal weakness of any other body parts. His deep tendon reflexes are 2+ and sensations in both the limbs are intact. On physical examination, there are bilaterally enlarged calf muscles and demonstrates a waddling gate. His vitals are within normal limits. On lab examination, the creatine kinase level is 2000 U/L. What is the most common cause of death in these patients?

Choices:

1. Pneumonia
2. Osteosarcoma
3. Dilated cardiomyopathy
4. Intracranial bleeding

Moh'd Terbi

Answer: 3 - Dilated cardiomyopathy

Explanations:

- A young male with adult-onset proximal muscle weakness and pseudohypertrophy of calf muscles with a waddling gate likely has Beckers muscular dystrophy. Becker muscular dystrophy (BMD) is an X-linked recessive disorder due to mutation in the dystrophin gene that results in progressive muscle degeneration and proximal muscle weakness.
- Death is most commonly due to dilated cardiomyopathy. Patients with Becker muscular dystrophy have a less severe and milder clinical course than Duchenne muscular dystrophy. Chances of survival decrease with the course of time as the disease progresses. Thus supportive interventions help prolong life. The average life expectancy of the patient with Becker muscular dystrophy is about 40 to 50 years.
- Progressive deterioration of the disease process is complicated by cardiomyopathy, progressive loss of pulmonary and liver functions, loss of ambulation, cognitive impairment, and bone fractures. All patients have a high chance of postoperative chest infections.
- Becker muscular dystrophy has no curative treatment, and supportive therapy, along with rehabilitation, is the mainstay of treatment. Many clinical trials for gene therapy are still in progress.

Mohit Tehri

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Research Concepts:

Becker Muscular Dystrophy

StatPearls Knowledge Base

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Moh'd Terbi

Question 683: A 10-year-old boy is brought to the emergency department with drowsiness, lethargy, and decreased urine output. His past medical history is unremarkable, except for diarrhea a few days ago that later becomes frankly bloody. Physical examination shows mild pallor and moist mucous membranes. Peripheral smear shows fragmented erythrocytes. The patient's condition is most likely related to the consumption of which of the following?

Choices:

1. Canned beans
2. Fried rice
3. Undercooked beef
4. Raw eggs

Moh'd Terbi

Answer: 3 - Undercooked beef

Explanations:

- Escherichia coli (E. coli) O157: H7 is a major, worldwide food-borne pathogen that causes life-threatening conditions, including hemolytic uremic syndrome (HUS) and thrombotic thrombocytopenic purpura (TTP). Patient history should include assessment of risk factors including consumption of raw or undercooked meats or dairy products, especially unpasteurized milk; exposure to ruminant animals or petting zoos, and exposure to farm animals.
- Patients will classically present with acute onset of bloody diarrhea and abdominal cramping, but without fever. Diarrhea initially may not be bloody, often being watery in consistency. Most patients will not manifest a fever during the initial presentation and evaluation. As a result of nausea, vomiting, and profuse diarrhea, patients will often have dehydration, asthenia, and decreased urine output.
- The epidemiological investigation has identified cattle as the main reservoir for E. coli O157: H7 after tracing outbreaks of Shiga toxin enterohemorrhagic diarrhea to domesticated animals, particularly feedlot cattle. Ruminant animals on farms act as a natural reservoir of E. coli 0157: H7. Zoonotic transmission of E. coli 0157:H7 occurs after consumption of undercooked meat or deficiently pasteurized dairy products or contact with contaminated fomites laden with Shiga toxin enterohemorrhagic E. coli.
- Approximately 5% to 10% of children with an E. coli O157: H7 infection will develop hemolytic uremic syndrome. Hemolytic uremic syndrome carries a 5% mortality rate, and those that survive are at increased risk of developing chronic kidney disease.

Mohd Terbi

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Research Concepts:

Escherichia Coli (E Coli 0157 H7)

StatPearls Knowledge Base

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Moh'd Terbi

Question 684: A 3-year-old boy presents to the office with his mother for a one-month history of multiple, nonpruritic, hyperpigmented skin lesions. His father had multiple cutaneous neurofibromas in childhood. On examination, there is axillary freckling and multiple hyperpigmented macules present on the trunk and vary in size from 6 mm to 10 mm. A slit-lamp examination of both eyes is normal. Results from an MRI of the head are pending. Which of the following is most likely associated with this patient's suspected condition?

Choices:

1. Rhabdomyoma
2. Meningioma
3. Oligodendroglioma
4. Optic nerve glioma

Moh'd Terbi

Answer: 4 - Optic nerve glioma

Explanations:

- Optic nerve glioma is the most common intracranial tumor associated with neurofibromatosis type 1 (NF 1).
- Optic nerve glioma occurs in about 10-15% of patients with NF 1.
- They typically present in childhood and occur rarely in adults.
- The tumors often are low-grade and indolent.

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Research Concepts:

Neurofibromatosis Type 1

Mo'd Terbi




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Question 685: A newborn is noted to be cyanotic during feeds in the well-baby nursery room. When the feed was withdrawn, he begins to cry and turns pink. He was born vaginally at 37 weeks of gestation; he had low birth weight. Physical examination reveals a withdrawn child lacking facial expressions with asymmetrical eyes and foul-smelling nasal secretion. The staff was not able to pass 6 French suction catheters through the nose. What is the test of choice to diagnose the patient's condition?

Choices:

1. CT scan
2. MRI
3. X-ray
4. Ultrasound

Moh'd Terbi

Answer: 1 - CT scan

Explanations:

- The clinical presentation of choanal atresia varies from acute life-threatening airway obstruction to chronic recurrent nasal discharge on the affected side.
- The most common presentation is constant nasal discharge from the affected side and a history of chronic sinusitis. CHARGE syndrome (coloboma, heart defects, atresia choanae (also known as choanal atresia), growth retardation, genital abnormalities, and ear abnormalities) is the most common condition associated with choanal atresia.
- The best diagnostic test to evaluate choanal atresia is a CT scan, which can further describe the features of the malformation, such as the thickness and anatomy of the atretic area, and the presence of thickness of a bony plate.
- Other diagnostic studies are not considered the best test to review the bony structures and are not used to evaluate patients' nasal anatomy.

Mohsen Terbi

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Research Concepts:

CHARGE Syndrome




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Question 686: After a difficult delivery a neonate is noted to have asymmetric Moro reflex. One of the arms is held in adduction, shows internal rotation at the shoulder, is pronated and extended at the elbow, and wrist flexion. Which nerve roots are most likely affected?

Choices:

1. C4-C5
2. C5-C6
3. C6-C7
4. C7-C8

Moh'd Terbi

Answer: 2 - C5-C6

Explanations:

- The description is classic for Erb palsy, a fairly common result of birth trauma that shows involvement of C5-C6 with resultant paralysis.
- It is a complication seen in 0.5-4.4% of vaginal deliveries, often associated with shoulder dystocia. Some studies report an incidence of 0.8-1 case per 1000 births.
- Spinal roots are much more susceptible to trauma due to absence of perineural and epineural sheaths.
- 90% of Erb palsy resolves within a year.

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Moh'd Terbi

Research Concepts:

Erb Palsy




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Question 687: A 3-year-old girl is brought to the hospital complaining of generalized fatigue and yellowish discoloration of eyes and skin for 3 days. She is also having bloody diarrhea for the last 5 days. On examination, she has a petechial rash on the trunk and the extremities. Her vitals are normal. Her lab studies are as follows; Hemoglobin: 8 g/dL, MCV: 88fL, total leukocyte count: 11,00/mm3, platelets: 49,000/mm3 , LDH: 500U/L, blood urea nitrogen : 72 mg/dL, creatinine: 2.8 mg/dL. Schistocytes are seen on the peripheral blood smear. Which of the following organism is most likely associated with this condition?

Choices:

1. Rotavirus
2. Escherichia coli 0157:H7
3. Staphylococcus aureus
4. Giardia

Moh'd Terbi

Answer: 2 - Escherichia coli 0157:H7

Explanations:

- This girl with the triad of hemolytic anemia, acute renal dysfunction, and thrombocytopenia, likely have hemolytic uremic syndrome. More than 90% of cases of HUS is associated with Shiga-like toxin (Verotoxin) produced by E. coli (O157: H7) and Shiga toxin by Shigella dysentery.
- The most common source of E.coli (O157: H7) is the consumption of undercooked beef or unpasteurized milk.
- HUS is most often associated with a gastrointestinal illness; thus, patients presenting early in the course of the disease will complain of fever, abdominal pain, nausea, vomiting, and diarrhea. After a week of such gastrointestinal symptoms, patients may start to develop symptoms more closely related to the triad that defines HUS.
- The management of HUS begins with good supportive care. The patients are often fluid depleted and benefit from several fluid boluses. Despite bacterial toxin being the primary trigger for HUS, Antibiotics are avoided in treating patients with HUS.

Mohit Tehri

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Research Concepts:

Hemolytic Uremic Syndrome




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improvement.

Moh'd Terbi

Question 688: A 17-year-old male comes to the clinic for a scheduled follow-up. The patient was diagnosed with familial Mediterranean fever (FMF) 1 month ago, and he was started on colchicine 1.2 mg dose. The patient reports that he is compliant with the therapy. His attacks have gone down in severity and frequency, and the treatment has indeed improved his quality of life. But he also reports stomach upset and severe diarrhea since starting the treatment. Which of the following is the next step in the management of this patient?

Choices:

1. Decrease the dose of colchicine
2. Continue current daily dose of colchicine and evaluate in one month
3. Advise to split the dose and take 0.6 mg twice daily
4. Discontinue colchicine and start infliximab therapy

Med'd Terbi

Answer: 3 - Advise to split the dose and take 0.6 mg twice daily

Explanations:

- Diarrhea is one of the common side effects of colchicine.
- Addressing this side effect is crucial for long term compliance with the colchicine treatment.
- Splitting the dose of colchicine into two or three divided doses is recommended to help patients with the side effects.
- Since the patient has a good response to colchicine at the current dose, reducing or discontinuing it will cause worsening of his familial Mediterranean fever (FMF) symptoms.

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Moh'd Terbi

Research Concepts:

Familial Mediterranean Fever




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Question 689: A 16-year-old female is brought to the emergency department with altered mental status and palpitations. The family reports that the patient had recently gotten out of a long-term relationship and was found with a bottle of pink-colored pills next to her. Her past medical history is significant for asthma, allergic rhinitis, and insomnia. Her home prescription medications include an albuterol inhaler, diphenhydramine, and lansoprazole. The patient is drowsy but can follow simple commands. Her pupils are dilated, and her mucosal membranes are dry. Vital signs include blood pressure 105/67 mmHg, pulse 120/minute, respiratory rate 20/minute, and oxygen saturation 98% on room air. ECG demonstrates a QTc interval of 510 milliseconds. Ingestion took place approximately 90 minutes ago. What are the appropriate measures to manage this patient?

Choices:

Mohit Tehlan

1. Intensive care unit admission for emergent hemodialysis
2. Emergent intubation for airway protection, metoprolol for sinus tachycardia
3. Physostigmine and sodium bicarbonate infusion
4. Ipecac followed by 1000 mL bolus of normal saline

Answer: 3 - Physostigmine and sodium bicarbonate infusion

Explanations:

- Patients with diphenhydramine toxicity present with an extension of adverse effects and generally include central nervous system depression and anticholinergic symptoms. Patients that present with mild to moderate poisoning exhibit more anticholinergic symptoms, which include dry mucous membranes, disorientation, tachycardia, mydriasis, urinary retention, hyperthermia, and decreased bowel sounds.
- There is currently no antidote that specifically works to reverse the effects of diphenhydramine toxicity. The mainstay of therapy of diphenhydramine toxicity is supportive management that addresses the symptomatology of intoxication/overdose.
- Physostigmine can be used to reverse anticholinergic symptoms seen in diphenhydramine toxicity. Sodium bicarbonate infusion can be used to manage ventricular arrhythmias.
- Cathartics, such as ipecac, have not been proven to be beneficial in diphenhydramine toxicity.

Weh'a Terbi

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Research Concepts:

Diphenhydramine Toxicity




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Question 690: A 16-year-old male with autism receives occupational therapy at school but has not been successful with shaving before school. He lives at home with his mother and sisters. The patient is being teased by the other students. What is the best option for treatment?

Choices:

1. Have the patient grow a beard
2. Have the teacher assist him when he gets to school
3. Find a male teen to role model for shaving
4. Have all the males in the class form a shaving group

Moh'd Terbi

Answer: 3 - Find a male teen to role model for shaving

Explanations:

- Shaving at school as a group would only be appropriate if there were multiple patients in need of this activity.
- In this case, shaving should be kept at home.
- A role model would be of assistance as would an electric razor.
- A role model can help the child to see things in an organized manner.

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Research Concepts:

Mohd Terbo

Autism Spectrum Disorder




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Question 691: A baby born a day ago is brought in by his mother with the concern that the baby has stopped breathing a few times. The baby was born at full-term via vaginal delivery after an uncomplicated pregnancy. The mother is breastfeeding, but the baby is having issues with latching on. On examination, the baby has a 20-second episode where he appears not to be breathing. Given the likely diagnosis, which of the following would be also expected in this patient?

Choices:

1. Tachycardia
2. Plethora
3. Pallor
4. Opisthotonus

Moh'd Terbi

Answer: 3 - Pallor

Explanations:

- Although apnea means cessation of breathing, it should be differentiated from other common benign conditions such as periodic breathing and breath-holding spells. Periodic breathing is the occurrence of brief periods of apnea that occur in short cycles of 5 to 10 seconds.
- Breath-holding spells occur predominantly in the 6 to 18 month age group when a prolonged cry is triggered by anger or frustration and followed by a brief period of apnea that may include a color change to cyanosis or pallor.
- Apnea of infancy is the unexplained episode of cessation of breathing for 20 seconds or longer and a shorter respiratory pause when associated with bradycardia, cyanosis, pallor, or marked hypotonia.
- It is critical to recognize true apnea to initiate appropriate interventions. In some cases, this may include resuscitation in addition to a thorough evaluation to determine the underlying cause.

Moh'd Terbi

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Research Concepts:

Infant Apnea




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improvement.

Moh'd Terbi

Question 692: A 1-month-old well-appearing boy is brought in by his mother for increased lacrimation on the right side for the past two weeks. On examination, right-sided watery discharge and debris on the eyelashes are noted. Palpation of the lacrimal sac results in mucoid discharge onto the eye through the puncta. No mass is present inferior to the medial canthus. There is no associated erythema or increased warmth of the overlying skin. What is the most likely diagnosis?

Choices:

1. Dacryostenosis
2. Dacryocystitis
3. Dacryocystocele
4. Infantile glaucoma

Moh'd Terbi

Answer: 1 - Dacryostenosis

Explanations:

- This patient has developed congenital nasolacrimal duct obstruction (NLDO), also known as dacryostenosis. NLDO or dacryostenosis is the most common disorder of the lacrimal system. Approximately 6 to 20% of newborn patients present with symptoms.
- Infants with congenital NLDO present with a history of chronic or intermittent tearing and debris on the eyelashes.
- Physical examination usually demonstrates an increase in the size of the tear meniscus. Palpation of the lacrimal sac may cause reflux of tears and/or mucoid discharge onto the eye through the puncta.
- Congenital nasolacrimal anomalies, particularly obstruction, can lead to various clinical manifestations, including infection due to fluid stasis within the lacrimal system. If the stenosis causes an infection of the lacrimal sac, then the patient can develop dacryocystitis with erythema of the overlying skin, increased warmth, and sometimes the patient can become febrile.

Mona Tarbi

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Research Concepts:

Nasolacrimal Duct Obstruction




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improvement.

Moh'd Terbi

Question 693: A 9-year-old female presents with her parents for an annual checkup. She has no complaints today and is meeting all developmental milestones. Physical examination is unremarkable. Based on United States Preventive Services Task Force (USPSTF) guidelines, routine screening for depression should start at what age in this patient?

Choices:

1. 10 years of age
2. 12 years of age
3. 14 years of age
4. 16 years of age

Moh'd Terbi

Answer: 2 - 12 years of age

Explanations:

- In 2016, the United States Preventive Services Task Force (USPSTF) updated their 2009 guidelines and recommended routine screening for depression in all adolescents aged 12 to 18 years in primary care settings (Grade B evidence).
- They also recommend having “adequate systems in place to ensure accurate diagnosis, effective treatment, and appropriate follow-up.”
- Similarly, the Guidelines for Adolescent Depression in Primary Care (GLAD-PC) recommends annual screening for depression in children aged 12 years and older.
- Patient Health Questionnaire-9 (PHQ-9), Beck Depression Inventory (BDI), Center for Epidemiological Studies Depression scale (CES-D), Composite International Diagnostic Interview (CIDI), Clinical Interview Schedule (CIS) are some of the screening tests for childhood depression. Of these, PHQ-9 and BDI are more commonly used tests and have the highest sensitivity (up to 90%) and specificity (up to 94%).

Monica Terbi

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Research Concepts:

Screening For Depression and Suicide in Children




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improvement.

Moh'd Terbi

Question 694: A 4-year-old male presents with short stature and early precocious puberty. Which of the following conditions most commonly causes these findings?

Choices:

1. Congenital adrenal hyperplasia
2. Prader-Willi syndrome
3. Growth hormone deficiency
4. Cushing syndrome

Moh'd Terbi

Answer: 1 - Congenital adrenal hyperplasia

Explanations:

- Congenital adrenal hyperplasia causes variable degrees of ambiguous genitalia in females and may cause premature pubarche in males and, if untreated, can cause precocious puberty in males with estrogen-mediated bone advancement and premature closure of growth plates resulting in short stature.
- The most common cause is the deficiency of the 21-hydroxylase enzyme which is detected by increased serum levels of 17-hydroxyprogesterone.
- Testing newborns for 17-hydroxyprogesterone first became available in 1977 and is now routine. Females with ambiguous genitalia should definitely be tested. If not diagnosed at birth, it may not become apparent until years later, sometimes not until adulthood.
- Growth hormone deficiency, Cushing syndrome, and Prader-Willi syndrome can all cause growth failure but not precocious puberty.

Moh'd Terbi

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Research Concepts:

Congenital Adrenal Hyperplasia




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Question 695: A 16-year-old girl presents to the emergency department to be evaluated after being sexually assaulted the night prior. Once in the exam room with the sexual assault nurse examiner (SANE), the patient tearfully exclaims that she does not want anyone to know, but she wants to make sure she's not pregnant. Which of the following is the next most appropriate course of action?

Choices:

1. Report the incident to the relevant authorities
2. Keep the incident a secret
3. Inform the patient's parents
4. Ask the patient to file charges against the person that assaulted her

Moh'd Terbi

Answer: 1 - Report the incident to the relevant authorities

Explanations:

- Providers are required to report sexual assault for those ages 17 years and younger.
- Maintaining HIPPA and patient privacy is a major concern for providers. However, providers must report sexual assault for certain patient populations.
- Mandatory reporting is required for the young, elderly, and disabled.
- The patient does not have to press charges against the offender. Examiners are required to report suspected sexual assault for all patients less than 18 years old.

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Moh'd Terbi

Research Concepts:

Sexual Assault Clothing Collection and Documentation




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Question 696: What distal radial (DR) fracture is described by dorsal angulation of the distal fragment of the radius?

Choices:

1. Smith
2. Colles
3. Chauffer
4. Barton

Moh'd Terbi

Answer: 2 - Colles

Explanations:

- All of the named fractures are eponymous distal radial (DR) fractures. A DR fracture with dorsal displacement of the distal fragment is the "Colles" fracture.
- Mechanism of injury for a Colles fracture is typically a fall on an outstretched hand (FOOSH). Older patients typically have a lower speed mechanism of injury, whereas younger patients typically suffer more significant mechanism traumas such as sports injuries or motor vehicle accidents.
- Most Colles fractures can be managed with closed reductions and splinting. Fractures should be reduced to less than 5 mm of shortening, less than 5 degrees of change in radial inclination, less than 2 mm of step-off, and less than 5 degrees of angulation.
- Any Colles fractures that are open, or involve neurovascular structures should receive immediate orthopedic consultation.

Wan'a Terbi

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Research Concepts:

Distal Radius Fractures




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Question 697: Which of the following most likely causes high fever, maculopapular rash starting after the fever resolves, conjunctivitis, upper respiratory symptoms, and a bulging fontanelle?

Choices:

1. Rubella
2. Cytomegalovirus
3. Roseola
4. Rubeola

Moh'd Terbi

Answer: 3 - Roseola

Explanations:

- Roseola infantum, or erythema subitum, is caused by the herpes 6 or 7 virus. It causes high fever, maculopapular rash starting after the fever resolves, conjunctivitis, upper respiratory symptoms, and a bulging fontanelle.
- Oral mucosal ulcers may also be present.
- The herpes 6 virus has a strong affinity for the CNS, which is invaded very early in the course of the infection. This probably accounts for the febrile seizures and other CNS findings.
- The one characteristic feature of Roseola is that despite the high fever, there are very few clinical manifestations. There is usually no evidence of a URTI, meningeal signs or dehydration.

Mohd Terbi

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Research Concepts:

Roseola Infantum




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Question 698: A 3-week-old boy is brought in by his parents due to irritability while breastfeeding since birth. The mother says he begins to cry and looks upset when breastfeeding. He cannot latch properly, causing extreme pain in her nipples. She has seen a lactation nurse that explained to her the appropriate feeding techniques, but the situation has not improved. On examination, the neonate has lost 350 grams since the last appointment one week ago. On intraoral examination, the lingual frenulum extends from the alveolar ridge to the tongue, preventing the tip of the tongue from lifting to the mid-mouth when crying. Other causes for feeding difficulty have been ruled out. Which of the following is the most appropriate treatment?

Choices:

1. Refer again to a lactation nurse
2. Refer to speech and language therapy
3. Frenuloplasty
4. Frenotomy

Med'd Terbi

Answer: 4 - Frenotomy

Explanations:

- This neonate presents with significant ankyloglossia, also known as tongue-tie, affecting his capacity to breastfeed. Poor weight gain, failure to latch, prolonged feeding, nipple pain, and trauma are associated with this disorder.
- The treatment of a short lingual attachment is usually delayed unless there are obvious speech or nursing difficulties. If other causes of difficulty feeding have been ruled out, then a frenotomy can be offered as a treatment option. Treatment options such as observation, speech therapy, frenotomy without anesthesia, and frenectomy under general anesthesia have all been suggested.
- Frenotomy is the most commonly used procedure for the treatment of ankyloglossia. This procedure is quick and can be done in an outpatient setting. It involves holding the tongue up to make the frenulum tight, then cutting through the fascia-like tissue along a line parallel and close to the tongue.
- The cut is made in a single motion and is done in less than a second. Some clinicians choose to give sucrose before the procedure to minimize the pain. The use of topical anesthetic gel for pain control is recommended. Frenuloplasty is rarely performed and requires general anesthesia.

Mohit Tehri

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Research Concepts:

Ankyloglossia

StatPearls Knowledge Base

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Question 699: A 7-month old infant born at 34 weeks of gestation is brought by his parents to the pediatric clinic with a complaint of shortness of breath, poor growth, and a mild fever. Physical examination revealed continuous, “machinery” murmur below the clavicle, radiating to the back and prominent precordial impulse, tachycardia, and bounding peripheral pulse. How long after birth does the suspected cardiac pathology take to close in a healthy term infant functionally?

Choices:

1. Up to 1 hour
2. Up to 24 hours
3. Up to 2 weeks
4. Up to 4 weeks

Moh'd Terbi

Answer: 2 - Up to 24 hours

Explanations:

- The presence of continuous, “machinery” murmur, prominent precordial impulse, tachycardia, and bounding peripheral pulse in a preterm born child are suggestive of patent ductus arteriosus.
- Functional closure occurs in 10 to 15 hours, although there may be a small shunt from the aorta to the pulmonary artery for a few days. Anatomic closure, which is a permanent closure, takes about 2 weeks.
- Closure of the ductus arteriosus takes longer in infants who are sick at birth or who are premature.
- Functional closure is due to constriction of the ductus arteriosus.

Mahdi Terbi

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Research Concepts:

Patent Ductus Arteriosus




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Question 700: An 8-year-old boy is brought to the clinic by her mother with a sudden onset of painful blisters on his face and neck and fever. The mother also says the boy is constantly scratching these vesicles. He has a past medical history of atopic dermatitis and asthma. On examination, there are monomorphic dome-shaped and grouped vesicles of 2 to 3 mm of size on an erythematous base over his face and neck. Which of the following tests is most likely to confirm this patient's diagnosis?

Choices:

1. Viral culture
2. DFA testing
3. Polymerase chain reaction
4. Bacterial culture

Moh'd Terbi

Answer: 3 - Polymerase chain reaction

Explanations:

- The diagnosis of eczema herpeticum can be made clinically if characteristic morphology is present.
- Polymerase chain reaction (PCR) can be performed on vesicle fluid to confirm the diagnosis.
- PCR can determine the type of herpesvirus with high sensitivity and specificity. If PCR is not available, a Tzank smear, direct fluorescent antibody (DFA) testing, and viral cultures can confirm HSV infection. Bacterial culture should be done if there is a concern for impetiginization.
- The Tzanck smear is positive in about 50% of patients showing giant multinucleated cells. Viral culture takes up to fourteen days. Direct fluorescent antibody testing is positive in about 75% of patients.

Moh'd Terbi

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Research Concepts:

Eczema Herpeticum




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Section 8

Question 701: A 6-month-old baby is brought in by her parents because they are concerned that she has an area of hair loss on her head. The baby was born at term via vaginal delivery with no complications during gestation. On examination, there is a soft, yellow, alopecic plaque with a waxy surface on the scalp. The parents report that the child does not seem bothered by the lesion. The child has met all milestones on time and does not appear to have any dysmorphic features. Given the likely diagnosis, what is the most appropriate course of management for this patient's lesion?

Choices:

Moh'd Terbi

1. Fully excise the lesion prior to puberty as there is a high risk of malignant transformation
2. Excise the lesion within the first few years of life due to a high risk of malignant transformation
3. Excise the lesion by request for cosmetic purposes; there is no risk of malignant transformation
4. Excise the lesion in older age for cosmetic purposes or if a suspicious lesion develops; there is a low risk of malignant transformation

Answer: 4 - Excise the lesion in older age for cosmetic purposes or if a suspicious lesion develops; there is a low risk of malignant transformation

Explanations:

- A nevus sebaceous is an epidermal nevus most frequently found on the head and neck. They are typically noted around the time of birth, but around puberty become more pronounced due to hormonal influences.
- The malignant potential of nevus sebaceous is low, particularly in the pediatric age population.
- Routine full-thickness excision of the nevus sebaceous is not considered the standard of care in the pediatric population.
- The excision of the lesion for cosmetic purposes can be performed at an older age when challenges of administering local anesthesia are reduced.

Mich'd Terbi

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Research Concepts:

Epidermal Nevus Syndromes




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Question 702: A 10-day-old girl is admitted to the pediatric intensive care unit with refractory seizures. Her prenatal history was unremarkable, except for hiccuping noted in utero. After birth, the patient started to have seizure activity and is noted to be encephalopathic and hypotonic. A septic workup for inborn errors of metabolism is initiated, including laboratory evaluation of the patient's cerebrospinal fluid, urine, and blood. Based on the patient's clinical presentation. Which of the following diagnostic test results is most consistent with this patient's diagnosis?

Choices:

1. Elevated glycine cerebrospinal fluid to plasma ratio of greater than 1
2. Hyperammonemia
3. Metabolic acidosis with elevated lactate, abnormal organic acids
4. Metabolic Acidosis with elevated lactate, normal pyruvate

Mon'd Terbi

Answer: 1 - Elevated glycine cerebrospinal fluid to plasma ratio of greater than 1

Explanations:

- A neonate that presents with seizures, lethargy, hypotonia and a prenatal history of hiccuping is concerning for nonketotic hyperglycinemia.
- Diagnostic workup for this condition consists of a blood and cerebrospinal fluid analysis glycine with specific attention to the glycine cerebrospinal to plasma ratio.
- An elevated glycine cerebrospinal fluid to plasma ratio is consistent with nonketotic hyperglycinemia.
- An elevated ammonia level is concerning for a urea cycle defect. Metabolic acidosis with ketosis and normal lactate is concerning for maple syrup urine disease. Metabolic acidosis with elevated lactate and abnormal organic acids is concerning for other organic acidemias such as methylmalonic acidemia, propionic acidemia, isovaleric acidemia, or multiple carboxylase deficiency. A patient with metabolic acidosis and a high lactate/pyruvate ratio are concerning for mitochondrial disorders.

Mona Terbi

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Research Concepts:

Nonketotic Hyperglycinemia




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improvement.

Moh'd Terbi

Question 703: A 4-year-old girl is brought to the hospital by her mother for lethargy and blue discoloration of her skin. Over the past few days, the patient has experienced nasal congestion, sinus tenderness, and a fever. The mother gave the patient ibuprofen to control the fever and topical lidocaine to reduce facial pain. Vital signs show a blood pressure of 100/66 mmHg, a pulse of 150/min, and a respiratory rate of 40/min. Physical examination reveals a lethargic-looking child in addition to her skin and nails showing a blue discoloration. Which of the following best describes the pathophysiology of the patient's condition?

Choices:

1. Increased affinity of carbon monoxide for hemoglobin
2. Lidocaine metabolism to O-toluidine
3. Patent ductus arteriosus
4. Decreased hemoglobin levels

Mah'd Terbi

Answer: 2 - Lidocaine metabolism to O-toluidine

Explanations:

- With signs of cyanosis and lethargy with recent local anesthetic use, this patient has methemoglobinemia.
- Methemoglobinemia can occur due to lidocaine metabolism to O-toluidine.
- O-toluidine oxidizes hemoglobin in the Fe^{2+} state (ferrous) to methemoglobin (Fe^{3+}, ferric). Ferric iron is unable to bind oxygen and unable to release oxygen to peripheral tissues.
- The treatment of choice for patients who developed lidocaine-induced methemoglobinemia is methylene blue.

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Moh'd Terbi

Research Concepts:

Lidocaine




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Question 704: A 4-month-old infant presents with hypotonia and yellowing of eyes and skin for the past two months. His parents have noticed general behavioral changes for the past one month. There is no history of fever, diarrhea, rashes. Both of the parent's blood group is O positive, and the infant is O positive too. On laboratory values, his indirect bilirubin was 24mg/dl. His lactate dehydrogenase and haptoglobin levels are normal. What is the most definitive treatment for this condition?

Choices:

1. Hydroxyurea
2. Phenobarbitol
3. Liver transplant
4. Exogenous pancreatic enzyme supplementation

Moh'd Terbi

Answer: 3 - Liver transplant

Explanations:

- Crigler-Najjar syndrome is an autosomal recessive inherited disorder that is characterized by the absence or decreased activity of UDP-glucuronosyltransferase, an enzyme required for glucuronidation of unconjugated bilirubin in the liver. It is one of the major causes of congenital non-hemolytic jaundice. The increased concentration of unconjugated bilirubin is the sole cause of disease manifestation. The severity of the disease depends upon the number of enzymes produced required for the glucuronidations of bilirubin.
- Liver transplantation is the only curative and definitive treatment method in Crigler-Najjar type I. Transplanted liver has a normal level of UGT1A1 enzyme for bilirubin conjugation, which reduces serum bilirubin level. Prophylactic liver transplantation is advised to prevent kernicterus as it is once established, may not be fully reversible.
- Crigler-Najjar syndrome is caused by an absence or decrease level of the enzyme UDP-glucuronosyltransferase due to a genetic defect in the UGT1A1 gene. About more than 30 different genetic lesions of UGT1A1 are responsible for the Crigler-Najjar type. The common mutation in Type I Crigler-Najjar syndrome is a deletion, alterations in intron splice donor and receptor sites, missense mutation, exon skipping, insertion, or the formation of a stop codon within the UGT1A1 gene leading to complete deficiency of enzyme UDP-glucuronosyltransferase.
- Clinically suspected cases should undergo serum unconjugated bilirubin levels. The level of unconjugated bilirubin is high in type I as compared to type II. In type I, the level of unconjugated bilirubin is between 20-25 mg/dl but can be as high as 50 mg/dl. In type II, it is usually less than 20 mg/dl. Bile collected from duodenum by upper gastrointestinal endoscopy and analyzed by chromatography for conjugated bilirubin is either absent or

Mohit Tehlan

present only in trace amount in type I, while the remarkable amount of conjugated bilirubin is noted in type II. High-performance liquid chromatography of bile obtained is the definitive test.

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Research Concepts:

Crigler Najjar Syndrome



Mohamed Ferbi

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Question 705: A 17-year-old male presents with painful swallowing. His condition started two days ago with a sore throat and fever, and then it progressed to having increased throat pain on the right side, a muffled speech, trismus, chills, malaise, and headache. The vital signs show a blood pressure of 100/60 mmHg, temperature 40 C (104 F), cardiac rate 110/min, and a respiratory rate of 22 breaths/min. The physical exam shows that the patient is ill-looking, with dry lips and oral mucosa, trismus. The right tonsil is pushed downward and medially. The uvula is swollen, edematous, and is pushed to the left side. There is a bulge on the soft palate and anterior tonsillar pillar. There is positive cervical lymphadenopathy. The complete blood count shows a hemoglobin of 14 g/dL, hematocrit 40%, WBC 15,000 microliters, segmenters 65%, lymphocytes 30%, and platelet count of 200,000 microliters. Which of the following is the best treatment for this patient's condition?

Moh'd Terky

Choices:

1. Acetaminophen
2. Ampicillin, metronidazole, and drainage of pus
3. IV dexamethasone and drainage of pus
4. Tetanus antitoxin

Answer: 2 - Ampicillin, metronidazole, and drainage of pus

Explanations:

- The patient has peritonsillar abscess (quinsy). It is a localized collection of pus in the peritonsillar space between the tonsillar capsule and the superior constrictor muscle.
- A peritonsillar abscess usually occurs following acute tonsillitis. The patient mainly complains of progressively increasing pain in the throat, which is usually unilateral. There may be referred earache on the same side. Associated odynophagia (painful swallowing) is present, which in some instances, becomes so severe that the patient can not swallow his or her saliva. This results in poor oral hygiene and oral sepsis-causing halitosis (foul breath). As the abscess size progresses, it may result in muffled speech or "hot potato" voice. Neck pain develops secondary to inflamed cervical lymph nodes. Trismus (inability to open mouth) of varying severity occurs in almost every case due to inflammation of the pterygoid muscles, which lie near the superior constrictor muscles. Other accompanying features include fever with rigors and chills, malaise, body aches, headache, nausea, and constipation.
- A patient with a peritonsillar abscess is hospitalized and started with intravenous fluids because they are usually dehydrated. A suitable intravenous antibiotic is started. The antibacterial spectrum should include gram-positive, gram-negative, and anaerobes. Commonly used empirical antibiotics are penicillins like ampicillin/amoxicillin in combination with metronidazole or clindamycin. (Ideally, antibiotic therapy should be started as per culture sensitivity reports). A patient is shifted to oral antibiotics once he improves and can tolerate orally. The appropriate treatment for a peritonsillar abscess is medical management along with drainage. Intraoral incision and drainage are carried out in a sitting position to prevent aspiration of pus.

Mohit Tekri

- Analgesics and antipyretics are given to relieve pain and fever for patients with peritonsillar abscess but is not the definitive treatment. The role of steroids for the management of peritonsillar abscess is controversial. Tetanus antitoxin is used for patients with Clostridium tetani infection.

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Research Concepts:

Peritonsillar Abscess



Moh'd Tabbi


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Question 706: A 6-year-old boy is brought to the emergency in a drowsy state with tachypnea and tachycardia. His mother reports a history of loose stools for 2 days. On general physical examination, he has sunken eyes, and a skin pinch goes back slowly. The capillary refill time is increased. On examination of the chest, he has chest indrawings, subcostal and intercostal recessions, and nasal flaring. Arterial blood gas analysis shows pH 6.8, CO_2 22 mEq/L, and bicarbonate 15 mEq/L. Which of the following is the next best step in the management of this patient?

Choices:

1. IV dexamethasone
2. IV sodium bicarbonate
3. Nebulized salbutamol
4. IV Ringer lactate

Moh'd Terbi

Answer: 4 - IV Ringer lactate

Explanations:

- For severely dehydrated patients, rapid restoration of fluids is required.
- Severely dehydrated patients can present with altered mental status, lethargy, tachycardia, hypotension, signs of poor perfusion, weak thread pulses, and delayed capillary refill.
- In this scenario, the patient has presented with severe dehydration, which caused metabolic acidosis due to diarrhea. This, in turn, caused excessive loss of bicarbonate.
- The best treatment is replacing the lost fluid with Ringer lactate at 100 mL/kg, which will correct metabolic acidosis. In children, we don't replace bicarbonate as it has adverse effects on the heart.

Mohd Terbi

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Research Concepts:

Pediatric Dehydration




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Question 707: A male presents with complaints worsening low back pain that first began six months ago and has gotten progressively worse. The pain is worse at rest and seems to get better with physical activity. On exam, patient spine is in slight flexion. X-ray of the lumbar spine reveals “bamboo spine” and widening of sacroiliac joints. Which ocular manifestation is seen in the most likely diagnosis?

Choices:

1. Purulent discharge
2. Perilimbal injection
3. Double vision
4. Amaurosis fugax

Moh'd Terbi

Answer: 2 - Perilimbal injection

Explanations:

- Anterior uveitis occurs in 30% of people with ankylosing spondylitis.
- The eye symptoms are generally unilateral and consist of pain, redness, photophobia, increased lacrimation, and blurred vision.
- HLA B27 positivity is seen in up to 90% of patients with acute anterior uveitis who have an associated spondyloarthropathy like ankylosing spondylitis.
- Other ocular associations of ankylosing spondylitis include scleritis, episcleritis, keratitis, and mechanical ptosis.

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Moh'd Terbi

Research Concepts:

Uveitis




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Question 708: A 16-year-old female presents with a 4-month history of vague abdominal pain and low-grade fever. She says she has extreme pain when she defecates. She has general malaise and arthralgia. Her abdominal radiographs are unremarkable and the rectal exam is very painful. Colonoscopy revealed significant inflammation in the ileocecal area with skip lesions. Biopsy revealed transmural lesions with a neutrophilic infiltrate. Which of the following is the most common portion of the GI tract affected in a patient with this disease?

Choices:

1. Esophagus
2. Proximal ilium
3. Terminal ilium
4. Colon

Moh'd Terbi

Answer: 3 - Terminal ilium

Explanations:

- Crohn disease (CD) is an immunologically mediated inflammatory bowel disease, which extends through the entire thickness of the bowel wall.
- CD can affect any area of the gastrointestinal tract from the mouth to the anus.
- It most commonly affects the terminal ileum.
- Most CD patients have a family history of a similar disease.

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Research Concepts:

Moh'd Terbi

Crohn Disease




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Question 709: A 10-year-old boy is brought for evaluation. His mother is concerned that he is larger than others his age in height and weight. She states that he spends 4 hours watching playing video games with constant snacking. Physical examination reveals a BMI of 20 kg/m2, which is 86th percentile for his age and gender. Which of the following best describes his weight category?

Choices:

1. Normal weight
2. Overweight
3. Class 1 obesity
4. Class 2 obesity

Moh'd Terbi

Answer: 2 - Overweight

Explanations:

- This patient falls in the 86th percentile range for BMI for his age and gender, which puts him in the overweight category.
- In adults, BMI is used to categorize weight; however, in contrast, in children aged between 2 and 20, weight status is based on a specific percentile range of BMI for each gender.
- Children (age 2-20 years) with their percentile for BMI lying between 85% to 95% are overweight.
- Children (age 2-20 years) with their percentile for BMI lying between 5% to 85% are characterized as normal-weight, those having between 85% to 95% are characterized as overweight, while those with the percentile less than 5% are deemed underweight.

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Research Concepts:

Obesity




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Question 710: A 27-day-old neonate is brought to the office by her mother for poor feeding and lethargy for one day. The mother also reports a weak cry and excessive drooling. She denies fever, cough, or history of trauma, but an older sibling did share some honey with his sister. On examination, the infant is afebrile and quiet and demonstrates decreased muscle tone, a weak sucking reflex, and decreased deep tendon reflexes. Blood, stool, and cerebrospinal fluid are sent for examination. Which of the following is the most appropriate treatment for this neonate?

Choices:

1. Equine-derived botulism antitoxin
2. Pyridostigmine
3. Human-derived botulism immune globulin
4. Ampicillin and gentamicin

Moh'd Terbi

Answer: 3 - Human-derived botulism immune globulin

Explanations:

- This neonate's symptoms, honey ingestion, and physical exam findings are suggestive of infantile botulism.
- Parents often describe their infant as having poor feeding, lethargy, a weak cry, and constipation. Infants can present with ptosis, excessive drooling, weak suck reflex, and shallow breathing due to respiratory suppression. The classic presentation is a “floppy baby.”
- Progression of the infection causes advanced symptoms, including descending bilateral, symmetric paralysis, and bulbar palsies (diplopia, dysphonia, and dysphagia).
- Human-derived botulism immune globulin is the treatment of choice in this baby. Treatment should be administered as soon as possible, without waiting for confirmation of the diagnosis. Noninfant botulism is treated with equine-derived antitoxin.

Monica Terbi

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Research Concepts:

Infantile Botulism




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Question 711: A 16-year-old boy spontaneously collapses during a basketball game. He has never had any symptoms previously and was in a healthy state for most of his life. The patient is not responding and does not have a significant pulse. Past medical history is notable for his father passing away from sudden cardiac arrest at the age of 36 years. Which of the following is the best initial step in the management of this patient?

Choices:

1. Nasal oxygen
2. Wait for ambulance arrival
3. Shock the patient with an automated external defibrillator (AED)
4. High-quality chest compressions

Moh'd Terbi

Answer: 4 - High-quality chest compressions

Explanations:

- The patient likely has hypertrophic cardiomyopathy (HCM), which can present suddenly. It is characterized by an autosomal dominant inheritance pattern. On significant exertion, the patient can develop an arrhythmia from the disorganized cellular structure from this disease. Often these arrhythmias can become life-threatening, leading to spontaneous collapse and death.
- CPR is the first-line modality in cardiac arrest. High-quality chest compressions significantly boost survivability. The mechanism of chest compressions is to attempt to circulate the patient's blood in the absence of coordinated myocardial contractility.
- Breaths do have a role in the CPR algorithm, but the initial step consists of high-quality chest compressions.
- AED should be retrieved as soon as possible in order to shock the patient if its shockable rhythm but high-quality CPR is the 1st step and should not be delayed. An ambulance should be called while the patient is being treated as per BLS/ACLS protocol.

Michio Terki

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Research Concepts:

Cardiopulmonary Resuscitation




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Question 712: A newborn has hypoplastic lower extremities, hypocalcemia, and hypoglycemia. What is the most likely diagnosis?

Choices:

1. Thalidomide exposure
2. Diabetic embryopathy
3. Adrenal hypoplasia
4. Holt-Oram syndrome

Moh'd Terbi

Answer: 2 - Diabetic embryopathy

Explanations:

- Macrosomia and hypoglycemia are common in infants of diabetic mothers.
- Other complications can include a single umbilical artery, vertebral defects, caudal regression, congenital heart disease, and cardiac septal hypertrophy.
- Diabetic embryopathy can be decreased by controlling blood sugar during pregnancy.
- Other anomalies include bilateral renal agenesis, sacral agenesis and visceral anaomalies.

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Moh'd Terbi

Research Concepts:

Diabetic Embryopathy




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Question 713: A 17-years-old male patient is brought to the emergency department for seizures. His family described a repetitive, rhythmic to and fro movement that started with his left hand and then involved his left arm. The movement lasted 3 minutes and has happened twice in the past week. There was no loss of consciousness, and the patient was fully aware during the episodes but had a new-onset weakness of the left arm. He is taking oxcarbazepine for seizures. On examination, vital signs are within normal limits. He is awake, alert, and able to follow commands. There were no cranial nerve deficits. The motor exam reveals 2/5 power distally and 3/5 power over the proximal left upper extremity, with normal strength on the rest of his extremities. There was no sensory deficit elicited. Which of the following is the next best step in managing the patient's neurologic deficit?

Choices:

Moh'd Terbi

1. Reassess in a few hours
2. Magnetic resonance angiogram
3. Lumbar puncture
4. Psychiatric consultation

Answer: 1 - Reassess in a few hours

Explanations:

- Simple partial seizures cause symptoms without alteration in consciousness or awareness.
- The progression of the seizure to the entire arm is called the Jacksonian march.
- The patient is suffering from Todd's paresis that takes minutes to hours to resolve. This is a known phenomenon secondary to some motor seizures, and resolution is spontaneous.
- The next best step in the emergency department is to reassess the patient for the neurologic deficit in a few hours. If the condition does not resolve, further imaging would be indicated.

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Moh'd Terbi

Research Concepts:

Simple Partial Seizure




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Question 714: A 16-year-old female patient with asthma comes in for a follow-up. She currently uses inhaled albuterol 100 mcg as needed combined with beclomethasone dipropionate 400 mcg twice a day. Despite this, she is having frequent exacerbations of asthma and recently required a course of oral steroids. What is the most appropriate next step in management?

Choices:

1. Add oral albuterol
2. Add tiotropium
3. Add salmeterol
4. Stop beclomethasone and start fluticasone

Moh'd Terbi

Answer: 3 - Add salmeterol

Explanations:

- This patient is on the second step of asthma management, where she is using an inhaled beta 2-agonist as needed and inhaled steroids twice a day.
- However, her frequent exacerbations indicate that the therapy is inadequate and needs to be escalated.
- The next step in asthma management would be to add an inhaled long-acting beta 2-agonist (LABA).
- The response to LABA would decide whether it is to be continued or not. If there is a benefit from LABA but the response is inadequate then the inhaled steroid dose is increased to 800 mcg/day. If there is no response to LABA it is stopped and the next step of asthma management is initiated.

Mohd Terbi

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Research Concepts:

Asthma Medications




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Question 715: A 16-year-old female presents to the hospital with complaints of pain in her right index finger that started an hour ago. She also gives a history of whitish discoloration of her finger. However, that subsided within twenty minutes. On further questioning, she reveals that this is the first time she has had such an episode, and it started after she argued with her mother. On further examination, she reveals that she was diagnosed with depression two months ago and is on sertraline. Her blood pressure is 100/70 mmHg, her pulse is 96/min, and her temperature is 37 C (98.6 F). A physical examination was performed, which reveals erythema in her finger. What is the most appropriate next step in the management of this patient?

Choices:

1. Dihydropyridine calcium channel blockers (CCB)
2. Conservative management
3. Topical nitrates
4. Phosphodiesterase (PDE) inhibitor

Moh'd Terbi

Answer: 2 - Conservative management

Explanations:

- The clinical scenario is consistent with the diagnosis of the primary Raynaud phenomenon. There are a lot of predisposing factors to this condition, and one of them is emotional stress.
- Conservative management to prevent the Raynaud phenomenon will be most helpful in case of a first attack. It includes avoiding exposure to cold, staying warm, avoiding stimulants, avoiding anxiety or emotional stress, and smoking cessation.
- Initially, a single digit is involved, followed by a symmetrical spread to other digits in both hands. Dihydropyridine calcium channel blockers (CCB) are used as a first-line pharmacological intervention in Raynaud's phenomenon.
- A phosphodiesterase (PDE) inhibitor is used when dihydropyridines are either contraindicated, or the patient fails to respond. Alternative therapy to treatment failure using CCB and PDE inhibitor is topical nitrates, such as nitroglycerin, which is a direct vasodilator.

Mona Tariq

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Research Concepts:

Raynaud Disease




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improvement.

Moh'd Terbi

Question 716: A 16-year-old male wrestler presents with pain and swelling of the left leg for one day. He mentions getting a cut on the left foot while playing soccer two days ago but denies receiving treatment for it. The patient denies a history of travel, coagulation disorders, and shortness of breath. On examination, the left leg is larger than the right and is erythematous, warm, and tender to the touch. Lab work is consistent with left leg cellulitis. The patient is placed on an intravenous infusion of vancomycin when he suddenly develops an erythematous rash on the face, neck, and chest. Which of the following is the most appropriate management for this patient?

Choices:

1. Stop the vancomycin, and treat with diphenhydramine and famotidine. The vancomycin may be restarted at half its prior rate when the rash resolves.
2. Stop the vancomycin and treat the patient with corticosteroids, epinephrine, and diphenhydramine.
3. Stop the vancomycin, treat with diphenhydramine and famotidine, add vancomycin to the patient allergy list and avoid using it on the patient in the future.
4. Stop the vancomycin and treat the patient with diphenhydramine and magnesium.

Monica Terry

Answer: 1 - Stop the vancomycin, and treat with diphenhydramine and famotidine. The vancomycin may be restarted at half its prior rate when the rash resolves.

Explanations:

- Vancomycin flushing syndrome may be managed by stopping the vancomycin, giving diphenhydramine and famotidine, and restarting it at half its original rate.
- Vancomycin may be given to this patient in the future at a rate no greater than 1 gram over two hours. Patients may be pretreated with diphenhydramine and famotidine.
- Vancomycin flushing syndrome is a rate-related adverse reaction, not an allergic reaction.
- Corticosteroids and magnesium are not recommended for the treatment of vancomycin flushing syndrome.

Mohd Terbi

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Research Concepts:

Vancomycin Flushing Syndrome




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Question 717: A 1-year-old girl presents to the office with her mother. She has a large disfiguring mass in her jaw that has been growing in size recently. Her mother first noted this mass a month ago, and it was small in size at that time. The patient was previously healthy without any complaints, she is up to date in her vaccine schedule, and she is reaching all her expected developmental milestones. The mother denies any recent respiratory infections or teething problems. On examination, the girl's face appears asymmetrical, there is a large mass on the left side of the mandible with a size of about 5x5 cm, making it difficult to examine the oral cavity. Eyes examination shows that pupils are equal, round, and reactive to light and accommodation, with no redness or discharge. Skull x-ray shows a destructive lesion on the left mandible with a "sunburst" appearance. CT scan shows a mandibular hypodense lesion. MRI shows a mass with increased signal on T1 and hypointensity on T2 that is invading the adjacent bony and soft tissue structures. Biopsy and immunohistochemical studies reveal nests of two types of cells; small cells positive for neuron-specific enolase (NSE), vimentin, and synaptophysin, and large cells with granules of melanin that stain positive for vimentin, cytokeratins and dopamine beta-hydroxylase (DBH). The clinician suspects a neoplasm that originates from the neural crest cells. In this patient, which of the following characteristics is associated with a higher mortality rate?

Mohit Tehlan

Choices:

1. Presentation at an old age
2. The small size of the lesion
3. Testing negative for antigen Ki-67
4. Increased vanillylmandelic acid in the urine

Answer: 1 - Presentation at an old age

Explanations:

- Melanotic neuroectodermal tumor of infancy (MNTI) is a rapidly growing benign tumor that arises from the neural crest. It typically affects infants less than 12 months and arises in the head and neck region.
- Under microscopy, two different types of cells can be distinguished; the first type is large melanin-containing epithelial cells, these cells usually have granules of melanin contained in the large eosinophilic cytoplasm small. The second type is the neuroblastic cells; these are small basophilic cells, with a small amount of cytoplasm.
- Although MNTI mostly presents as a benign neoplasm, malignant behavior was observed in 3% of cases. Presentation after age 12 months associated with 75 folds mortality. However, presentation before 2 months associated with high recurrence.
- Although it is rare, the expression of Ki-67 and CD99 on MNTI is associated with more aggressive behavior of the lesion.

Mehdi Terki

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Research Concepts:

Melanotic Neuroectodermal Tumor Of Infancy




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Question 718: A 17-year-old female patient presents with a complaint of prolonged and profuse menstrual bleeding. She had menarche at age 12, and her periods have been regular, lasting 7 to 8 days with profuse bleeding. She reports multiple episodes of epistaxis and easy bruisability. Her family history is remarkable for a bleeding disorder in her mother. The physical examination is unremarkable. It is suspected that the patient has a hereditary bleeding disorder. Which of the following may be the reason for a prolonged bleeding time in this patient?

Choices:

1. Reduced coagulation factor level
2. Reduced coagulation factor function
3. Reduced platelet count
4. Reduced level of a protein necessary for platelet function

Moh'd Terbi

Answer: 4 - Reduced level of a protein necessary for platelet function

Explanations:

- The patient's most likely diagnosis is von Willebrand disease, the most common bleeding disorder affecting women.
- The disease is caused by von Willebrand factor (vWF) deficiency and/or dysfunction.
- vWF is a protein necessary for platelet adhesion to endothelial surfaces.
- Due to defective platelet adhesion, bleeding occurs.

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Moh'd Terbi

Research Concepts:

Bleeding Time




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Question 719: A 1-month-old male is brought in with complaints of severe fussiness. The patient can be seen crying and raising his legs to his chest intermittently. On examination, there is left-sided swelling and erythema of the upper pole of the left scrotum. A small blue dot can be seen on the skin above the superior pole of the left testes. This patient has most likely developed which of the following?

Choices:

1. Irreducible inguinoscrotal hernia
2. Torsion of the appendix testis
3. Epididymo-orchitis
4. Testicular torsion

Moh'd Terbi

Answer: 2 - Torsion of the appendix testis

Explanations:

- Torsion of the testicular appendages is considered to be the most common cause of acute scrotal pain in prepubertal children and may even be the single most prevalent cause of pediatric orchalgia.
- On initial physical examination of the condition, tenderness can often be localized to the upper pole of the testis or epididymis. There may be a palpable, localized mass in the area of maximum tenderness.
- A "blue dot sign" may also be present as a para-testicular nodule noted on the superior aspect of the testicle; this can be identified by stretching the scrotal skin overlying the superior pole of the testicle and is representative of an ischemic testicular appendage, often a torsed appendix testis.
- Color Doppler ultrasonography is the imaging modality of choice for the evaluation of the acute scrotum in all age groups.

Mona Terbi

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Research Concepts:

Appendix Testes Torsion




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Question 720: A previously healthy 16-year-old male patient presents at the emergency department for acute onset gait instability. The patient was drowsy, with mild slurring of speech, cannot do finger to nose test on both hands, has a swaying gait, and falls on both sides on tandem gait. There are no motor and sensory deficits. Reflexes are normal, and negative Babinski bilaterally. What is the most likely diagnosis?

Choices:

1. Ataxia telangiectasia
2. Rheumatic fever
3. Drug intoxication
4. Syphilis

Moh'd Terbi

Answer: 3 - Drug intoxication

Explanations:

- Acute onset of ataxia commonly is caused by drug overdose or intoxication.
- The most commonly used substance that may cause acute ataxia is alcohol.
- Children and adolescents are more susceptible to the effects of alcohol compared to adults.
- Antiepileptic drugs, ketamine, phencyclidine, and dextromethorphan also can cause acute ataxia.

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Moh'd Terbi

Research Concepts:

Ataxia




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Question 721: A 17-year-old woman with focal motor seizures involving her left upper extremity is found to have a vascular lesion on the brain MRI involving her right motor cortex. This lesion was not seen on angiography. What feature of this type of lesion would favor medical management over surgical resection?

Choices:

1. Location in eloquent cortex
2. Supratentorial location
3. Seizures refractory to antiepileptic medication
4. Location of the lesion at the cortical surface

Moh'd Terbi

Answer: 1 - Location in eloquent cortex

Explanations:

- Cavernous malformations can present with seizures.
- First-line treatment for seizures associated with cavernomas is typically medical management with antiepileptic drugs.
- For seizures associated with a cavernous malformation that are refractory to management with antiepileptic drugs, surgical resection may be considered.
- Supratentorial location, accessible location near the cortical surface, and non-eloquent cortex are all features associated with less surgical morbidity. In contrast, infratentorial location, deep location, and associated eloquent cortex are all features associated with increased surgical morbidity. These factors should be considered when deciding on surgical or non-operative management of cavernous malformations.

Mch'd Terbi

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Research Concepts:

Cavernous Venous Malformation




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Question 722: A 17-year-old female presents with recurrent bilateral lower quadrant abdominal pain, 10-pound weight loss, and loose stools without rectal bleeding for the past six months. The stools are watery and of moderate volume. She denies travel for the past ten months. She is not taking any medication. She has not been exposed to other individuals with similar symptoms and denies particular food intolerances. Past medical history is noncontributory. She denies alcohol intake or recreational drug use. The family history is remarkable for hypertension and dyslipidemia. Her pulse is 82 bpm, respirations 13 breaths per minute, blood pressure 112/68 mmHg, and temperature of 98.6 F (37 C). HEENT and cardiopulmonary exams are normal. The abdominal exam demonstrates mild bilateral lower quadrant tenderness without masses. The rectal exam is normal. The skin exam demonstrates erythematous, firm, solid, deep nodules and plaques that are painful on palpation and mainly localized to extensor surfaces of the legs. Further inquiry reveals she also has pain in both knees. Laboratory evaluation shows sodium 142 meq/L, potassium 3.9 meq/L, urea nitrogen 19 mg/dL, creatinine 0.9 mg/dL, total bilirubin 0.8 mg/dL, AST 22 U/L, ALT 24 U/L, and alkaline phosphatase 109 U/L. Stool cultures for bacterial pathogens, ova and parasites, and Clostridium difficile toxin are negative. A colonoscopy shows nodular mucosa and focal ulceration with rectal sparing. What is the most likely cause of the cutaneous lesions in this patient's legs?

Mehdi Terki

Choices:

1. Pyoderma gangrenosum
2. Erythema nodosum
3. Sweet syndrome
4. Metastatic Crohn disease

Answer: 2 - Erythema nodosum

Explanations:

- Crohn disease is associated with abdominal pain, loose and usually nonbloody stools, fatigue, and possibly weight loss. Cobblestoning, discontinuous inflammation involving any part of the gastrointestinal tract, with rectal sparing, is typical.
- Erythema nodosum consists of acute nodular septal panniculitis, characterized by the sudden onset of erythematous, firm, solid, deep nodules or plaques that are painful on palpation and mainly localized to extensor surfaces of the lower extremities.
- Erythema nodosum is present in 6 to 15% of patients with Crohn disease.
- Pyoderma gangrenosum is more commonly associated with ulcerative colitis but can be seen with Crohn disease. Tender papulopustular lesions with a surrounding violaceous rim and purulent base are characteristic. Sweet syndrome is more commonly seen with upper respiratory infections and solid tumors. Lesions of Sweet syndrome consist of edematous papules and plaques that favor the head, neck, and upper extremities. Metastatic Crohn disease consists of lesions characteristic of Crohn disease on biopsy.

Mohit Tarkiv

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Research Concepts:

Crohn Disease



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Moh'd Terbi

Question 723: A 17-year-old man presents after developing abdominal pain, nausea, and vomiting over the past 12 hours. He has no past medical history and is currently homeless. On examination, there is diffuse abdominal tenderness with no rebound tenderness or guarding, and his body mass index (BMI) is 16 kg/m2. The stool examination showed numerous eggs, as well as rhabditiform larvae. Which of the following classes of drugs would be most appropriate to treat this patient?

Choices:

1. Nitroimidazoles
2. Benzimidazoles
3. Tetracyclines
4. Piperazines

Moh'd Terbi

Answer: 2 - Benzimidazoles

Explanations:

- Combined infections with two or even three different nematode species are common in people with inadequate personal hygiene, or those living in a poor sanitation area.
- Mebendazole is a broad spectrum anti-helminthic agent, and it belongs to the benzimidazole group.
- Mebendazole is the drug of choice for roundworm and whipworm infection and is an alternative drug for threadworm infection.
- Piperazines (Diethylcarbamazine) is effective against filariasis only. Nitroimidazole (Metronidazole) is effective against Dracunculus medinensis only. It is not effective against other nematode species. Tetracycline is an antibiotic.

Mohd Terbi

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Research Concepts:

Mebendazole




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Question 724: A 17-year-old boy presents with complaints of intermittent burning micturition and infrequent bone pains. Urinalysis shows trace blood on his urine dip test and the presence of calcium crystals. Ultrasound pelvis revealed hyperechoic foci with acoustic shadowing in the urinary bladder. Lab reports revealed a serum calcium level of 11.3 mg/dL and a serum phosphate level of 4.0 mg/dL. 24-hour urinary calcium level revealed a value of 403 mg/L (100 to 300 mg/L). A DEXA scan to determine the bone density was advised. What is the significance of average bone density reading in such patients compared to normocalciuric stone formers?

Choices:

1. Both have the same bone mineral densities
2. They are at more risk of bone fractures
3. They have better bone mineral density than their normocalciuric peers
4. They are prone to heteroplastic osteoma formation

Moh'd Terbi

Answer: 2 - They are at more risk of bone fractures

Explanations:

- Hypercalciuria is generally considered to be the most common identifiable metabolic risk factor for calcium nephrolithiasis. It also contributes to osteopenia and osteoporosis. Its significance is primarily due to these two clinical entities: nephrolithiasis and bone resorption.
- On average, hypercalciuric calcium stone formers have decreased bone mineral density than matched controls which are neither stone formers nor hypercalciuric.
- Even among kidney stone patients, those with hypercalciuria will have average bone calcium density measurements 5 to 15% lower than their normocalciuric peers.
- This can often be corrected by the addition of a thiazide based diuretic or indapamide.

Moh'd Terbi

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Research Concepts:

Hypercalciuria




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Question 725: A 7-year-old male presented with progressive muscle weakness. His mother notes that he was always a clumsy child and prone to frequent falls. At age 3, he walks on his toes a lot and has to push on his knees to be able to stand. He now complains of difficulty in going up the stairs, easy fatiguability, and increased falls. On examination, the muscles of the tongue, forearm, and calves are enlarged. He cannot get up from the floor by himself. Which of the following is expected on a muscle biopsy?

Choices:

1. Muscular degeneration and replacement with fatty tissue
2. Irregular and hypertrophied muscle bundles
3. Normal findings
4. Increased mitochondria and presence of muscle inclusions

Moh'd Terbi

Answer: 1 - Muscular degeneration and replacement with fatty tissue

Explanations:

- The patient is most likely suffering from Duchenne muscular dystrophy (DMD).
- Progressive muscle weakness due to mutation in the dystrophin gene is seen.
- Muscle biopsy shows fatty replacement and muscle degeneration.
- As DMD is inherited as an X-linked recessive manner, boys are more frequently affected than girls.

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Moh'd Terbi

Research Concepts:

Duchenne Muscular Dystrophy




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Question 726: A 3-year-old child is brought to the emergency room with complaints of extreme third, increased urinary frequency, weight loss, fatigue, and lack of concentration. Upon further inquiry, the parents explain that she has been having a fever and pain in the ear for the last two days. Physical examination reveals fruity breath with deep breathing, dehydrated, and semi-conscious child. Laboratory analysis shows sodium 140 mEq/L, potassium 4.1 mEq/L, bicarbonate 18 mEq/L, pH 7.31, and hemoglobin 13.3 g/dL. Urinalysis shows 4+ glucose and 3+ ketones. What is the most common cause of death in such patients?

Choices:

1. Cerebral edema
2. Infection
3. Electrolyte disturbance
4. Aspiration pneumonia

Moh'd Terbi

Answer: 1 - Cerebral edema

Explanations:

- Diabetic ketoacidosis (DKA) is a severe complication of relative insulin deficiency affecting primarily type-1 diabetes mellitus (DM). DKA can occur in type-2 DM when insulin levels fall far behind the body's needs. DKA is so named due to high levels of water-soluble ketone bodies (KBs), leading to an acidotic physiologic state.
- Ill patients with type-1 DM should be evaluated for DKA. DKA could cause critical symptoms or occur secondarily to another illness. In newly diagnosed diabetic children, there may be a history of polydipsia, polyuria, weight loss, fatigue, lack of concentration, poor school performance, or recurrent infection.
- DKA is definitively diagnosed by blood testing, with metabolic acidosis and typically hyperglycemia. Ketone testing can be helpful but is not necessary. Low serum bicarbonate (below 18 mmol/L) with an elevated anion gap (AG) will be present and can prevent the need for blood gas testing. The anion gap is calculated as follows: (Na+K)-(Cl+HCO_3). Ketoacids (primarily BHB) are unmeasured ions, leading to the "gap" in anions. The AG is generally between 6 mEq/L to 12 mEq/L, with levels above 15 typically present in DKA.
- The leading cause of death in diabetic ketoacidosis (DKA) is cerebral edema. It is associated with up to 25% of deaths in DKA. There is evidence linking cerebral edema with early insulin treatment. This is why in the last few years, the new guidelines for DKA treatment advise starting fluid therapy first for an hour and then beginning the insulin infusion.

Mori's Tutor

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Research Concepts:

Pediatric Diabetic Ketoacidosis




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Moh'd Terbi

Question 727: A 2-year-old child is brought to the ophthalmologist with complaints of the eyes looking downwards. On examination, the ophthalmologist notices that the eyes are looking downwards and there is a limitation of elevation. The pupillary examination reveals light-near dissociation bilaterally. There is also a convergence retraction nystagmus. An MRI of the brain is ordered. What would be the most likely MRI finding in this patient?

Choices:

1. Frontal lobe meningioma
2. Cavernous sinus thrombosis
3. Subdural hematoma in the occipital area
4. Pinealoma

Moh'd Terbi

Answer: 4 - Pinealoma

Explanations:

- Parinaud syndrome is caused by lesions of the midbrain.
- The classical triad of Parinaud syndrome includes conjugate upgaze palsy, convergence retraction nystagmus, and pupillary light-near dissociation.
- Henri Parinaud first described it as upgaze palsy and convergence palsy.The most common causes of Parinaud syndrome are pineal gland tumors and intrinsic midbrain lesions like hemorrhages and infarctions.
- All the other conditions are not common causes of pupillary light near dissociation.

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Moh'd Terbi

Research Concepts:

Parinaud Syndrome




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Question 728: A 16-year-old male diagnosed with type 1 diabetes mellitus for ten years presents with unrelenting vomiting for 12 hours. He was noncompliant with his insulin medications and did not follow up with his clinician for a year. His urine is positive for large ketones. ABGs revealed pH 7.11, PCO2 17, Bicarb 5.6, CO2 6, and PO2 46. Glucose was 326 mg/dL. Which of the following electrolyte imbalances is most likely to be expected?

Choices:

1. Hypernatremia
2. Hyperphosphatemia
3. Hypercalcemia
4. Hypokalemia

Moh'd Terbi

Answer: 4 - Hypokalemia

Explanations:

- Diabetic ketoacidosis (DKA) occurs primarily in patients with type 1 diabetes mellitus but can also occur in some patients with type 2 diabetes mellitus.
- Patients in DKA are overall potassium depleted due to loss of potassium in urinary losses and excretion of potassium salts. Even though patients are overall potassium depleted, the serum potassium may be high, normal, or low at presentation due to redistribution of potassium from intracellular to extracellular fluids. Hydration with intravenous fluids and insulin causes the potassium to shift back into the cells and unmasks the potassium deficit causing hypokalemia.
- Serum potassium levels need to be monitored and replaced closely especially given the risk of cardiac arrhythmias.
- Other serum electrolyte imbalances seen in DKA include pseudohyponatremia, acidosis, hypophosphatemia, elevated blood urea nitrogen (BUN), and creatinine levels.

Mehta Tejal

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Research Concepts:

Pediatric Diabetic Ketoacidosis




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Question 729: A 17-year-old male patient is admitted to the hospital with a 4-day history of fever, headache, and mental status changes. His clinical examination reveals that he is conscious but not alert to place and person. His cerebrospinal fluid (CSF) analysis shows lymphocytic pleocytosis with normal glucose and mildly raised protein. MRI shows hyperintensity of the left temporal lobe. He is started on treatment. Which is the following findings may be seen on the electroencephalogram (EEG)?

Choices:

1. Poly spike and waves
2. Burst suppression pattern
3. Lateralized periodic discharges (LPDs)
4. Generalized periodic discharges (GPDs)

Moh'd Terbi

Answer: 3 - Lateralized periodic discharges (LPDs)

Explanations:

- This patient has symptoms of Herpes simplex virus (HSV) encephalitis.
- This patient has symptoms of HSV encephalitis. While a burst suppression pattern may be seen in this patient if the condition deteriorates in HSV encephalitis or if he is placed on medication-induced coma to control refractory status epilepticus, this pattern is not expected when the patient is awake.
- Lateralized periodic discharges (LPDs) are seen in HSV encephalitis. Other findings that can be seen include diffuse or focal slowing. Lateralized periodic discharges (LPDs) indicate focal structural lesions (usually acute), as seen in HSV encephalitis. HSV encephalitis has a predisposition to temporal lobes.
- Generalized periodic discharges (GPDs) are not expected in patients with HSV encephalitis. Temporal lobe involvement, as seen on MRI, makes temporal slowing and lateralized periodic discharges (LPDs) more likely. Poly spike and waves are seen in myoclonic epilepsy, which is a primary generalized epilepsy. Poly spike and waves are not seen in patients with HSV encephalitis.

Moh'd Terki

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Research Concepts:

EEG Abnormal Waveforms



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Moh'd Terbi

Question 730: A 6-year-old boy was brought to the emergency department by his parents for evaluation of visual loss on the left side. The parents reported that the patient has been having intermittent frontal headaches over the past few months. On examination, he has difficulty abducting the left eye and has papilledema. His mother reports that he is shorter than his other siblings and friends. Brain imaging revealed a cystic sellar mass measuring 3 cm with calcification. He had trans-sphenoidal surgery. The pathology showed yellow-brown, cholesterol-rich fluid with nodules of “wet keratin,” representing desquamated cells that form large, pale, eosinophilic masses. What is the most likely diagnosis?

Choices:

1. Adamantinomatous craniopharyngioma
2. Papillary craniopharyngioma
3. Growth hormone-producing pituitary adenoma
4. Prolactin producing adenoma

Med'd Terbi

Answer: 1 - Adamantinomatous craniopharyngioma

Explanations:

- Craniopharyngiomas are histologically benign grade I tumors. There are two histologic subtypes of craniopharyngiomas: adamantinomatous and papillary.
- Craniopharyngiomas represent 1.2% to 4% of all childhood intracranial tumors. Craniopharyngioma has a classical bimodal distribution of incidence with increased incidence rates in patients aged 5 to 14 and 50 to 74 years.
- Adamantinomatous craniopharyngioma (ACP) is primarily seen in pediatric cases but can be seen in adults as well. They have solid and cystic parts.
- Papillary craniopharyngioma (PCP) is commonly seen in adults. They are characterized as well-differentiated squamous epithelium lacking surface maturation, with occasional goblet cells and ciliated epithelium. Calcifications are rare in papillary type.

Monica Terbi

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Research Concepts:

Pediatric Craniopharyngioma




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Question 731: A 21-year-old nulliparous woman presents to the hospital in the second stage of labor. Due to limited resources, she did not seek care during her pregnancy. The facility is a rural community hospital with delivery services and a newborn nursery but no neonatal intensive care unit (NICU). Based on the date of her last menstrual period, she is in the 39th week of gestation. Within 30 minutes of arrival, she delivers a female neonate. The Apgar scores are 8 and 9 at one and five minutes, respectively. The neonate's weight and length are in the 5th percentile, and the head circumference is in the 30th percentile for presumed gestational age. Her vital signs are within normal limits. She has peeling, loose skin and decreased muscle mass, but the physical examination is otherwise normal. What is the best next step in the management of this neonate?

Choices:

Moh'd Terbi

1. Transfer her to a hospital with a NICU for management by an experienced neonatal team.
2. Admit her to the pediatric intensive care unit (PICU) for intravenous fluids and treatment for congenital infection.
3. Allow her to stay with her mother, monitor temperature, weight, and blood glucose, and discharge after 48 hours if she is stable.
4. Allow her to stay with her mother, provide normal newborn care, and discharge after 24 hours if she is stable.

Answer: 3 - Allow her to stay with her mother, monitor temperature, weight, and blood glucose, and discharge after 48 hours if she is stable.

Explanations:

- After the neonate is cleaned, dried, and stabilized, she should remain with her mother. Her feeding pattern, body temperature, weight, and glucose levels should be closely monitored.
- Term neonates who are small for gestational age (SGA) or have fetal growth restriction (FGR) are at risk for complications such as hypoglycemia and hypothermia but can typically be supported with routine care and enhanced monitoring. If she maintains a normal temperature and glucose level with routine care, transfer to a NICU or PICU is unnecessary, and separation from her mother may be detrimental to both her and her mother.
- While evaluation for a congenital infection is an important component of the management of an infant with SGA or FGR, admission to an intensive care setting is unnecessary in an otherwise healthy-appearing infant.
- An infant who is SGA should be monitored in the hospital for 48-72 hours and is not a candidate for early (48 hours) discharge.

Mohsen Terbi

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Research Concepts:

Small for Gestational Age



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Moh'd Terbi

Question 732: A 29-year-old G1P0 is admitted for the management of labor and delivery. A baby boy weighing 4500 grams is born after a difficult vaginal delivery. Spontaneous movement of the newborn's left hand is absent, and there is no response upon stimulating the medial side of the left hand. Given the likely diagnosis, which nerve roots are involved in this newborn's condition?

Choices:

1. C3 and 4
2. C4 and 5
3. C5 and 6
4. C8 and T1

Moh'd Terbi

Answer: 4 - C8 and T1

Explanations:

- This newborn suffered a birth injury to the lower brachial plexus from the difficult delivery presenting as an absence of spontaneous movement of the left hand and unresponsiveness to stimulation of the medial side of the left hand.
- This newborn has Klumpke palsy due to damage to the 8th cervical (C8) and 1st thoracic (T1) nerves.
- Other features of Klumpke palsy are the absence of grasp reflex and voluntary movements of the wrist.
- Erb palsy is more common than Klumpke palsy and results from damage to the 5th and 6th cervical (C5 and C6) nerve roots. It presents as adduction and internal rotation of the arm with loss of finger extension.

Mohd Terbi

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Research Concepts:

Birth Trauma




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Question 733: A 2-year-old boy is brought to the hospital for evaluation. He has a heart rate of 130/min with otherwise normal vitals. He weighs 12 kg. The exam shows a tired appearing male child who is crying with tears. HEENT exam shows moist mucosa with erythematous papulovesicular eruptions on the buccal mucosa. What is the most appropriate rehydration strategy for this patient?

Choices:

1. D5 normal saline 120 mL over 30 minutes
2. Water 500 mL over 2 hours
3. Commercial drink with low carbohydrates and no sodium 750 mL over 2-4 hours
4. Compounded oral solution with 1:1 glucose/sodium content 900 mL over 4 hours

Moh'd Terbi

Answer: 4 - Compounded oral solution with 1:1 glucose/sodium content 900 mL over 4 hours

Explanations:

- This patient shows evidence of mild to moderate dehydration based on having tears and moist mucosa. Tachycardia is not one of the most specific findings for dehydration and can be attributed to pain rather than a sign for shock or severe dehydration.
- Oral replacement therapy is the recommended modality of resuscitation for mild to moderate dehydration in those without a contraindication to oral intake such as respiratory distress, neurological impairment, and certain head and neck anatomical abnormalities.
- CDC recommends replacement with an oral solution of 1:1 glucose to sodium ratio to promote intestinal mucosal absorption. The approximate amount of solution needed over 4 hours is calculated by multiplying the patient's weight in kg by 75.
- Commercial sports drinks often are hyperosmolar with high carbohydrates to sodium content that promote osmotic diarrhea. Both sports drinks and free water fail to take advantage of physiologic sodium-glucose transporters for increased intestinal absorption.

Monica Tarin

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Research Concepts:

Pediatric Fluid Management



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Moh'd Terbi

Question 734: A two-week-old boy presents for a routine visit. On physical exam, the Barlow and Ortolani maneuvers are positive. Which pregnancy-related condition most increased this infant's risk for the exam findings?

Choices:

1. Preeclampsia
2. Polyhydramnios
3. Oligohydramnios
4. Gestational diabetes

Moh'd Terbi

Answer: 3 - Oligohydramnios

Explanations:

- This clinical vignette suggests a diagnosis of developmental dysplasia of the hip (DDH).
- Clinical examination is crucial in identifying DDH, especially babies with risk factors. Hip instability or dislocation can be identified by the Barlow and Ortolani manoeuvers.
- Oligohydramnios refers to an amniotic fluid volume that is less than expected for gestational age. Due to low fluid levels, newborns are at higher risk of DDH.
- Any physical limitation in utero, including large for gestational age, oligohydramnios, and twins, can contribute to DDH. In utero physical limitations also increase the risk of other abnormalities like metatarsus adducts, congenital muscular torticollis, and congenital knee dislocation.

Moh'd Terbi

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Research Concepts:

Developmental Dysplasia Of The Hip




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Question 735: A 7-year-old male is brought to the emergency department by his parents with a rash on his body. The vital signs show a blood pressure of 110/70 mmHg, cardiac rate 80/min, respiratory rate 18 breaths/min, and oxygen saturation of 98%. Physical examination is notable for pruritic reddish raised lesions with a smooth surface all over her body. Lungs are clear. The child has no history of any allergies; however, his parents mention that the child has tried different kinds of seafood for the first time, about two hours ago. Which of the following is the best next step in the management of this patient?

Choices:

1. Antihistamines
2. Epinephrine
3. Norepinephrine
4. Dopamine

Moh'd Terbi

Answer: 1 - Antihistamines

Explanations:

- Food allergy is defined as an immune reaction to proteins in the food and can be immunoglobulin (Ig)E-mediated or non–IgE-mediated. Any food can cause allergy, but overall only a few foods account for the vast majority of allergies. This includes milk, eggs, peanuts, shellfish, wheat, and nuts.
- This child has a mild allergic reaction, most probably to the seafood that he tried. The next step in the management is giving an antihistamine shot.
- Over time, most children outgrow or become tolerant of food allergens to eggs, milk, wheat, and soy. However, allergies to nuts and shellfish are more long-standing. Close to 20% of children have a resolution of their food allergy by school age.
- Epinephrine is given for anaphylaxis; however, the child's symptomatology suggests otherwise. Anaphylaxis is a potentially fatal allergic reaction that occurs rapidly and involves multiple systems, including cutaneous, cardiovascular, respiratory, and gastrointestinal symptoms. His vitals given in the question are normal for his age.

Mohit Tariq

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Research Concepts:

Food Allergies



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Moh'd Terbi

Question 736: An 8-year-old vegetarian girl is brought to the clinic by her parents with complaints of extensive yellow-orange skin pigmentation. General physical examination reveals yellow-orange skin pigmentation in the palms, soles, forehead, the tip of the nose, and nasolabial folds. However, the sclera and mucous membranes are normal. The rest of the systemic examination is insignificant. She is otherwise healthy. A blood test shows hemoglobin levels of 11 g/dL, a white blood cell count of 7,000/mL, a platelet count of 260,000/mL, and bilirubin levels of 0.7 mg/dL. Her drug history includes antibiotic treatment for her sore throat one week back. Which of the following is most likely responsible for this condition in this patient?

Choices:

1. Carrots
2. Lack of meat
3. Yellow cheese
4. Antibiotics for sore throat

Moh'd Terbi

Answer: 1 - Carrots

Explanations:

- The sign and symptoms, along with normal bilirubin levels in this patient, are most likely suggestive of carotenemia.
- Carotenemia is a benign condition. It usually occurs due to excessive carotenoids in the diet. Common sources include carrots, beans, asparagus, broccoli, mango, oranges, and prunes.
- Beta-carotene is the main carotenoid found in plants and is most responsible for this condition.
- Carotene has a high affinity to fat and gets deposited in the corneum contributing to yellow skin discoloration sparing mucus membranes if blood levels are excessively high.

Mohd Terbi

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Research Concepts:

Carotenemia




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Question 737: A 10-year-old boy is brought to the clinic by his mother due to a spreading rash on his body. She reports he had flu-like symptoms 2 weeks ago, which resolved without any treatment. She has now noticed his fever has returned with a rash that started on his trunk and has spread to his armpits and groin. The rash appears red, papular, and blanching and is generalized on the body, sparing his palms and soles. He has no significant past medical history. His blood pressure is 110/80 mmHg, heart rate is 80/min, respiratory rate is 20/min, and temperature is 102 F. Which of the following additional findings is most likely to be seen in this patient?

Choices:

1. Blisters at the oral commissure
2. A white membrane on the pharynx
3. Strawberry tongue
4. Ulcerated lesions on the dorsum of the tongue

Mon'd Terbi

Answer: 3 - Strawberry tongue

Explanations:

- The patient in the clinical scenario presents with scarlet fever, a contagious bacterial infection seen mostly in children between 5 and 15 years of age. The first signs of the disease are usually flu-like symptoms, sore throat, and fever.
- Scarlet fever's characteristic sandpaper rash appears a few days later. This is a papular-blanching rash that lacks confluence.
- The sandpaper rash develops on the face, trunk, underarms, and groin first, later spreads to the extremities sparing the palms and soles.
- Scarlet fever has a very common oral manifestation known as the “strawberry tongue.” The appearance of a strawberry tongue begins with hyperplastic papillae and white coating; as the white coating resolves, the remaining papules give the tongue a red, bumpy strawberry appearance.

Mona Terbi

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Research Concepts:

Bacterial Infections Of The Oral Mucosa




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Question 738: A 17-year-old male patient has been brought to the trauma bay after being stabbed in the neck. Upon arrival, his vitals are all within normal limits, and he is able to answer questions. His physical examination reveals a 2 cm laceration at the anterior border of the left sternocleidomastoid halfway between the clavicle and the mandible and air bubbles are originating from the wound. What is the next appropriate step in management?

Choices:

1. Proceed directly to the operating room (OR)
2. Order an x-ray neck
3. Perform a bronchoscopy and esophagogastroduodenoscopy (EGD)
4. Order a CT angiography (CTA) of the neck

Moh'd Terbi

Answer: 1 - Proceed directly to the operating room (OR)

Explanations:

- The neck is divided into three zones: zone I from the clavicle to the cricoid cartilage, zone II consists of the area from the cricoid cartilage to the angle of mandible, and zone III contains area from the angle of the mandible to the base of the skull. Injuries in zone I or III require further imaging, but injuries to zone II mandate surgical exploration.
- This patient has a mechanism of injury that should raise a high degree of suspicion for tracheal injury as well as air bubbles coming from the wound, which should raise further concern. This patient has to be operated in the operating room (OR).
- The air bubbles from the wound the location of injury in zone II of the neck mandates surgical exploration of the neck both to diagnose and potentially treat any injury to the trachea.
- While x-ray can reveal free air in the mediastinum secondary to tracheal injury, it would have a low diagnostic yield for this patient. If the patient had an injury to zone I or zone III, with no signs of tracheal or esophageal injury, and were stable, then CT angiography (CTA) would be indicated. Bronchoscopy and esophagogastroduodenoscopy (EGD) are indicated when there is diagnostic uncertainty of an injury to the trachea or the esophagus, which is not the case for this patient.

Mohit Tehri

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Research Concepts:

Tracheal Trauma

StatPearls Knowledge Base

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Moh'd Terbi

Question 739: A 6-year-old girl with HIV is brought to the clinic for an initial visit. She was recently adopted, and her parents are concerned because her records show that she has not received any of her Haemophilus influenzae type b (Hib) vaccinations. What is the most appropriate recommendation regarding Hib vaccination for this patient?

Choices:

1. Recommend two doses of Hib vaccine administered eight weeks apart
2. Recommend one dose of Hib vaccine
3. Recommend three doses of Hib vaccine administered at least four weeks apart
4. Recommend against Hib vaccine as it is contraindicated in patients with HIV

Moh'd Terbi

Answer: 2 - Recommend one dose of Hib vaccine

Explanations:

- The Hib vaccine is an inactivated vaccine, indicating its safety for people in an immunocompromised state (i.e., HIV-positive).
- Patients living with HIV are at higher risk of Haemophilus influenzae type b disease.
- Any child between the ages of 5 to 18 years with HIV and incomplete or no Hib vaccination history should receive one dose of the Hib vaccine.
- Children are at the highest risk of contracting Hib infections when younger than five years of age. Healthy children, more than five years of age do not require the Hib vaccine, even if previously unvaccinated.

Mahdi Terbi

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Research Concepts:

Haemophilus Influenza Type B Vaccine




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Question 740: A 16-year-old male patient presents to the hospital with a new-onset rash on his penis and scrotum. He states that the rash is tender but not pruritic and has not changed in location. His dermatologist has recently prescribed a new medication for his acne. On examination, there are circular, raised, blanching erythematous plaques on the glans of a circumcised penis. What medication is this patient most likely taking?

Choices:

1. Doxycycline
2. Adapalene
3. Erythromycin
4. Trimethoprim

Moh'd Terbi

Answer: 1 - Doxycycline

Explanations:

- The most common medications resulting in fixed drug eruptions are tetracyclines, phenolphthalein, phenacetin, NSAIDs, barbiturates, and sulfa-drugs.
- Fixed drug eruptions cause a circular, erythematous to violaceous rash most commonly on the oral mucosa and genitalia. Edema and vesicles may occur with this rash.
- Treatment of fixed drug eruptions focuses on eliminating the offending agent. However, low-potency topical steroids may be used for quicker resolution of symptoms. When an offending agent is re-introduced, the drug eruption is expected to return in the same location.
- While the other answers are possible treatments for acne, the tetracycline family is the most commonly implicated. Any medication has the potential to cause a drug eruption.

Mona Terbi

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Research Concepts:

Balanoposthitis





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Question 741: A 9-month-old boy is brought to the clinic by his mother after she noticed whitish opacity in both the eyes and inward deviation of either eye for the past one month. On examination, there is no congestion, watering, or proptosis of either eye. The intraocular pressure is normal. The red glow is not visible on distant direct ophthalmoscopy. The ultrasound B scan is normal with an anechoic vitreous cavity. There are no similar complaints in any of the other family members in the past. When enquired further, the mother reports testing positive for TORCH infections during her antenatal period, for which she did not take any medications. The rest intranatal and postnatal histories are uneventful with full-term normal vaginal delivery. Which of the following is the most likely diagnosis?

Choices:

1. Retinopathy of prematurity
2. Retinoblastoma
3. Pediatric cataract
4. Familial exudative vitreoretinopathy

Moh'd Terbi

Answer: 3 - Pediatric cataract

Explanations:

- Pediatric cataract is the most common cause of whitish opacity in the eye (leukocoria).
- TORCH infections in the antenatal period in the mother is a risk factor for the development of pediatric cataract.
- Early diagnosis and management are crucial in cases of pediatric cataracts. If not diagnosed early, they can lead to permanent amblyopia.
- Other causes of leukocoria include retinoblastoma (vitreous cavity will show mass with calcifications), retinopathy of prematurity (history of low birth weight and preterm birth), and FEVR (usually have a positive family history with a later age of presentation in teens to adulthood), etc.

Mohud Terbi

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Research Concepts:

Pediatric Cataract




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Question 742: A 3-year-old female presents to the clinic for immunization. She was administered an influenza vaccination after all aseptic measures. After the vaccine was administered, it was noticed by the provider that the child suddenly stopped breathing, fainted, and became pale. The vital signs show a blood pressure of 100/60 mmHg, a temperature of 37.5 C (99.5 F), a heart rate of 60/min, and a respiratory rate of 20 breaths/min. After 30 seconds, she regained consciousness and felt quite sleepy. She is conscious and coherent. The physical examination reveals pink palpebral conjunctiva, anicteric sclera, no nasal discharge, and no cervical lymphadenopathies. Chest examination reveals symmetrical chest expansion, no retractions, and clear breath sounds. The cardiac examination reveals no murmur. The neurological exam is unremarkable. Developmental milestones are age-appropriate. Which of the following tests is frequently done had this event occurred unsupervised and lasted greater than 2 minutes?

Moh'd Terky

Choices:

1. Magnetic resonance imaging of the brain
2. Electroencephalogram
3. Computed tomography of the brain
4. Serum electrolytes

Answer: 2 - Electroencephalogram

Explanations:

- Breath-holding spells may occur in children with a normal neurological exam and in children who meet age-appropriate developmental milestones, but normally breath-holding spells do not affect a child's subsequent neurological development.
- Breath-holding episodes usually follow an inciting event in which the patient is disciplined, angry, or irritated. Then an episode of crying and breath-holding episodes may occur, leading to loss of consciousness.
- The child has the pallid form of breath-holding, which usually follows a painful experience or frightening experience. In her case, the painful experience is the administration of the influenza vaccine. After an inciting event, the heart rate slows, the child stops breathing, loses consciousness, and becomes pale. Children may become sweaty and have body jerks or lose bladder control. Episodes are usually brief, and the child regains consciousness without intervention; however, the child may seem sleepy for a while.
- Breath holding spell is a clinical diagnosis. EEG is not necessary for the diagnosis of classical breath-holding spells. However, breath-holding spells should be differentiated from epilepsy if the diagnosis is unclear (such as an unsupervised event, increasing frequency of the spells, or events lasting more than 2 minutes). In those cases, EEG can be done to rule out seizures. Neuroimaging studies are unnecessary since these patients have normal anatomy. Serum electrolytes are requested if a patient has a seizure to determine if the cause is an electrolyte imbalance.

Mehdi Terki

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Research Concepts:

Breath Holding Spells




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Moh'd Terbi

Question 743: A 17-year-old female presents with anxiety, weight loss, and heat intolerance. Her exam shows exophthalmos and diffuse thyromegaly. There is decreased thyroid stimulating hormone (TSH) and increased T4 and T3. Thyroid biopsy shows colloid scalloping at the follicular margins and increased cellularity. What antibody is most likely present?

Choices:

1. Anti-thyroglobulin antibodies
2. Anti-thyroid peroxidase antibodies
3. TSH receptor activating antibodies
4. TSH receptor blocking antibodies

Moh'd Terbi

Answer: 3 - TSH receptor activating antibodies

Explanations:

- The patient has Graves disease caused by TSH receptor activating antibodies.
- They result in hypercellularity and hyperfunction of the thyroid.
- Graves disease causes 60 to 90 percent of hyperthyroidism, is 5 to 10 times more common in females, and is the most common cause of severe hyperthyroidism.
- Hashimoto thyroiditis can be secondary to anti-thyroglobulin and/or anti-thyroid peroxidase antibodies.

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Moh'd Terbi

Research Concepts:

Graves Disease




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Question 744: A 16-year-old male patient presents to the emergency department with severe pain and swelling in his right knee. His chart indicates that his last measured factor VIII level was less than 5 IU/dl (50-150 IU/dL). He reports that he used to replace his factor VIII for bleeding prophylaxis, but he has recently started on a new drug. It is decided to administer activated prothrombin complex concentrate (PCC). What is the complication that should be considered before initiating therapy?

Choices:

1. Microangiopathic hemolytic anemia without ADAMTS13 deficiency
2. Intracranial hemorrhage
3. Thrombotic thrombocytopenic purpura (TTP)
4. Hemolytic uremic syndrome (HUS)

Moh'd Terbi

Answer: 1 - Microangiopathic hemolytic anemia without ADAMTS13 deficiency

Explanations:

- A boxed warning cautions providers to avoid concurrent administration of PCC greater than 100 U/kg within 24 hours in patients taking Emicizumab. Thrombotic microangiopathy was reported in 8.1% of patients, and thrombotic events were reported in 5.4% of patients who received at least one dose of PCC.
- Patients with thrombotic microangiopathy (TMA) presented with thrombocytopenia, microangiopathic hemolytic anemia, and acute kidney injury without severe deficiencies in ADAMTS13.
- Patients who receive greater than 100 U/kg of PCC within 24 hours of emicizumab risk thrombotic complications.
- By definition, thrombotic thrombocytopenic purpura (TTP) requires an ADAMTS13 level of less than 10%.

Widhia Terbi

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Research Concepts:

Emicizumab




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Question 745: A 17-year-old female is evaluated for a 3-month history of a rash over the cheeks and nasal bridge. She noticed that her rash gets worse with sun exposure, stress, and alcohol. She complains of intermittent pimples that appear with the rash. What is the most likely diagnosis?

Choices:

1. Acne vulgaris
2. Rosacea
3. Lupus erythematosus
4. Polymorphous light eruption

Moh'd Terbi

Answer: 2 - Rosacea

Explanations:

- Rosacea is a chronic inflammatory acneiform disease that involves the facial area, especially in middle age. Rosacea is considered the most common cause of a malar rash.
- Rosacea usually occurs in fair-skin patients and involves the cheeks, chin, forehead, eyelids, and nose. Classic findings include erythema, telangiectasia, and pustules or papules with no comedones.
- The rash of rosacea may be accompanied by episodes of flushing triggered by hot drinks, stress, or alcohol. Genetic factors and extrinsic factors are involved in the pathogenesis of the disease.
- Rosacea never causes systemic illness.

Mohd Terbi

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Research Concepts:

Malar Rash




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Question 746: A 16-year-old female presents to the emergency department with abdominal pain, nausea, and vomiting. She reports the pain is in the epigastrium and is associated with repeated nausea and vomiting. Her physical examination is notable for epigastric tenderness to palpation as well as periumbilical ecchymosis. Which of the following best describes the pathophysiology of her physical exam findings?

Choices:

1. Retroperitoneal hemorrhage
2. Common bile duct obstruction
3. Centrilobular hepatic necrosis
4. Mesenteric ischemia

Moh'd Terbi

Answer: 1 - Retroperitoneal hemorrhage

Explanations:

- It was initially believed that Scarpa fascia prevented hernia formation but this is not true. The fascia is not strong.
- It is now believed that the superficial fascia acts as a scaffolding which attaches the abdominal wall skin to the deeper layers so that there is no sagging.
- Scarpa fascia is very flexible and can change shape and size.
- During certain medical disorders, such as acute pancreatitis, fluid may collect in Scarpa fascia. If there is rupture, one may see bruising as in Grey Turner sign or Cullen sign.

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Moh'd Terbi

Research Concepts:

Acute Pancreatitis




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Question 747: A child has been repeatedly vomiting and retching for more than a day. His mother noticed a bloody vomit that worried her. What is the most likely cause of bleeding?

Choices:

1. Viral gastritis
2. Mallory-Weiss tear
3. Boerhaave syndrome
4. Peptic ulcer disease

Moh'd Terbi

Answer: 2 - Mallory-Weiss tear

Explanations:

- Mallory-Weiss tears occur after several episodes of vomiting.
- The tear usually occurs in the gastroesophageal junction.
- The bleeding is usually self-limited.
- If bleeding continues endoscopic ligation or cautery can be performed.

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Research Concepts:

Mallory Weiss Syndrome

Moh'd Terbi




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Question 748: A 5-year-old boy suddenly starts choking during breakfast at a restaurant while eating potatoes. The patient is unable to talk, cough, or make noise. His face begins to turn blue. Which of the following is the best initial step in the management of this patient?

Choices:

1. Mouth-to-mouth breaths
2. Chest thrusts
3. Abdominal thrusts
4. Back blows

Moh'd Terbi

Answer: 3 - Abdominal thrusts

Explanations:

- Choking is typically defined as an aerodigestive foreign body causing varying amounts of obstruction to the airway.
- Sudden onset of cough, choking, and/or dyspnea have been found to be the most common symptoms.
- The Heimlich maneuver is performed for a choking child (age greater than1 year).
- It consists of upward and inward abdominal thrusts alternating with back blows. Chest thrusts can be used in pregnant or obese patients where abdominal thrusts are not possible. Mouth-to-mouth breaths are relatively contraindicated with a known airway foreign body.

Mahdi Terbi

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Research Concepts:

Foreign Body Aspiration




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Question 749: A 37-year-old mother miscarries in the third trimester. Fetopsy shows a baby with holoprosencephaly, a ventricular septal defect, and a cleft lip and palate. Which of the following screening tests would have been most sensitive and specific in diagnosing this syndrome?

Choices:

1. Ultrasound at 15 weeks
2. Chorionic villi sampling
3. Quad screen
4. Maternal chromosomal analysis

Moh'd Terbi

Answer: 2 - Chorionic villi sampling

Explanations:

- The findings on fetopsy are typical of Patau syndrome, which is caused by trisomy 13. This is most commonly due to nondisjunction in meiosis in a mother of advanced age (defined as greater than 35 years old).
- Fetal DNA must be evaluated for the diagnosis of Patau syndrome. This can be done with chorionic villi sampling, amniocentesis, fetal free DNA analysis, or with tissue microarray.
- Many patients with Patau syndrome will die in utero so that diagnosis may be made at fetopsy. However, many other infants are live born and have a median survival of 7-10 days.
- Ultrasound may detect fetal malformations, but is not diagnostic and does not have optimal sensitivity until after 17 weeks. The quad screen may also suggest Patau syndrome, but is not diagnostic.

Mohd Terbi

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Research Concepts:

Patau Syndrome




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Question 750: A 1-day-old boy is being evaluated in the neonatal intensive care unit. The patient was born at 35 weeks gestation after induction for preeclampsia with severe features. Due to a prolonged second stage of labor, a forceps assisted vaginal delivery was performed. The examination of the patient shows a comfortable neonate with no signs of acute distress. There is a well-demarcated, firm swelling on the parietal scalp with no tenderness. The swelling does not cross suture lines. The remainder of the examination is unremarkable. Which of the following is a possible complication of this patient's condition?

Choices:

1. Hyperbilirubinemia
2. Hydrocephalus
3. Seizure
4. Life-threatening hemorrhage

Moh'd Terbi

Answer: 1 - Hyperbilirubinemia

Explanations:

- This patient's presentation of a firm, non-fluctuant swelling of the parietal scalp, which does not cross suture lines, most likely has a cephalohematoma.
- Cephalohematomas usually present hours after birth and form in the subperiosteal layer of the skull.
- Cephalohematomas can occur due to trauma during forceps or vacuum-assisted deliveries.
- Cephalohematomas have a risk of causing hyperbilirubinemia due to red blood cell breakdown. Rarely, an infection may also occur.

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Moh'd Terbi

Research Concepts:

Cephalohematoma




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Question 751: A 6-months-old, otherwise healthy, male presents with an oval pigmented lesion on his right arm. The lesion's maximal diameter is 2 cm and there is hypertrichosis with perifollicular hypopigmentation. When asked, the patient's parents assure the patient was born with that lesion. What would be the most appropriate management for this patient?

Choices:

1. Excision of the lesion with a 1cm-margin
2. Close follow-up of the patient with excision after 2 years of life
3. Incisional biopsy of the lesion in order to rule out malignancy
4. No treatment is required

Moh'd Terbi

Answer: 4 - No treatment is required

Explanations:

- The question is describing a single medium-sized congenital melanocytic nevi. These lesions are benign, and their risk of progressing to melanoma is extremely low. Therefore, surgery in these patients is not recommended on medical grounds.
- Patients and their parents can sometimes be distressed due to the "ugly" appearance (color variation, hypertrichosis, etc.). Therefore, they should be reassured of the benign nature of the lesions.
- The development of melanoma before puberty in these patients is exceptional. Hence, follow-up during childhood is not strictly necessary. However, patients (or relatives) should be advised to perform skin self-examinations to detect any early changes.
- A biopsy is only required when the diagnosis can not be established clinically (i.e., to rule out melanoma).

Mona Terbi

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Research Concepts:

Congenital Nevus




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Question 752: A 6-month-old male presented with the complaint of generalised seizures for the last two days. He has also developed an exaggerated response to loud noises and decreased ability to crawl or sit up for the previous week. His mother also reports that he responds poorly to a visual stimulus. On initial visual assessment (VA), there is a marked decrease in peripheral vision. Laboratory investigations revealed a decreased level of hexosaminidase-A. What will be seen on fundus examination of both eyes?

Choices:

1. Cherry red spots
2. Papilledema
3. Optic atrophy
4. Optic neuritis

Moh'd Terbi

Answer: 1 - Cherry red spots

Explanations:

- Tay-Sachs disease is an autosomal recessive disease. It is one of many lysosomal storage diseases. The HEXA gene codes for the enzyme Hexosaminidase-A. This enzyme is responsible for the conversion of GM2 ganglioside to GM3 ganglioside. A mutation in the HEXA gene results in decreased levels of this enzyme resulting in the accumulation of GM2-gangliosides in lysosomes.
- There is an accumulation of intra-lysosomal gangliosides in the retinal ganglion cells. This results in a greyish-white appearance around the fovea centralis. The foveolar region does not contain ganglion cells; hence it retains the normal reddish appearance. This produces the cherry-red spot. Eventually, optic atrophy occurs due to loss of ganglion cells and axonal decay, resulting in blindness.
- There is progressive neurodegeneration which starts at 3-5 months of age. Most individuals are never able to walk. Eventually, patients develop uncontrolled seizures, swallowing difficulty, dementia, and blindness. Harmful quantities of gangliosides accumulate in the nerves of the brain leading to premature death.
- Tay-Sachs disease is more common in Ashkenazi jews as compared to the general population. A DNA evaluation is recommended to identify the disease-causing and disease-carrying allele. Treatment is mainly supportive as no definitive treatment is available for Tay-Sachs disease. Enzyme replacement therapy has not shown promising results.

Moh'd Tervi

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Research Concepts:

Tay-Sachs Disease




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Moh'd Terbi

Question 753: A 6-year-old boy presented to the hospital with three episodes of convulsive seizures over the last six months. Parents were also concerned about his new-onset regression in learning and memory. An EEG capturing non-REM sleep confirmed his diagnosis. The findings of EEG were suggestive of near-continuous spike-wave discharges. Which of these would be an acceptable option to start his treatment?

Choices:

1. Levetiracetam
2. Ethosuximide
3. The ketogenic diet
4. Perampanel

Moh'd Terbi

Answer: 1 - Levetiracetam

Explanations:

- This patient has electrical status epilepticus in sleep (ESES), which is a childhood-onset epileptic encephalopathy, characterized by epilepsy, cognitive regression, and marked activation of epileptiform activity during non-rapid eye movement (NREM) sleep to produce an electroencephalography (EEG) pattern of near-continuous spike-wave discharges.
- In a placebo-controlled, double-blind, cross-over study, levetiracetam was noted to decrease the spike-wave index to 37 (mean) from a baseline of 56 (mean) at the end of the treatment period (P0.0002).
- The treatment goal is the suppression of the EEG abnormalities, improvement of the seizure control, amelioration of the behavioral abnormalities, and reversal of cognitive regression.
- Ethosuximide is a narrow spectrum antiepileptic drug, specifically for absence seizures. Perampanel and the ketogenic diet have been studied in a small number of patients with ESES, and no specific recommendation can be made regarding their efficacy.

Mohit Tekri

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Research Concepts:

Electrical Status Epilepticus In Sleep



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Moh'd Terbi

Question 754: A mother brings in her 2-year-old son for an initial well-child visit. The mother says her son is doing well and mentions he was diagnosed with a congenital disorder. Records indicate he has been on special formula and nitisinone since one week of age because his body cannot metabolize one of the amino acids. Both parents are healthy and have no signs of the disease. A mutation in the gene responsible for this disease is located on which chromosome?

Choices:

1. Chromosome 2
2. Chromosome 7
3. Chromosome 11
4. Chromosome 15

Moh'd Terbi

Answer: 4 - Chromosome 15

Explanations:

- The patient in this vignette has hereditary tyrosinemia type I (HT1), which is inherited as an autosomal recessive trait. As per the Mendelian inheritance pattern, the recurrence risk of autosomal recessive disorder is 25%. Both parents are asymptomatic carriers of the disease. HT1 is caused by a mutation in the fumarylacetoacetate hydrolase (FAH) gene located on chromosome 15(15q23-q25 locus).
- HT1 is usually diagnosed with newborn screening by elevated succinylacetone.
- FAH enzyme deficiency leads to fumarylacetoacetate (FAA) accumulation, which is deposited in hepatocytes and proximal renal tubules, causing liver and kidney damage. FAA is also mutagenic and is believed to cause hepatocellular carcinoma seen in HT1 patients. Molecular genetic testing can detect these mutations for a confirmatory diagnosis.
- Molecular genetic testing can detect mutations in the FAH gene. Type II and type III of hereditary tyrosinemia are also transmitted as autosomal recessive traits. Genetic counseling is recommended for all patients with hereditary tyrosinemia.

Mona Tariq

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Research Concepts:

Hypertyrosinemia



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Moh'd Terbi

Question 755: A 10-year-old Hispanic boy is brought to the clinic by his mother for an annual wellness visit. He denies any physical complaints. His mother complains that he has been growing so quickly she has to keep buying him longer pants. She is surprised that he is so tall already and that he is already taller than both his mother and father, as well as everyone else in the family. His vital signs are within normal limits for his age, although he is in the 96th percentile for height. On examination, he has mild gynecomastia. A genitalia exam reveals Tanner 1 development, a normal-appearing phallus, and descended but somewhat small testicles bilaterally. What is the most likely genotype associated with the patient's condition?

Choices:

1. 47,XYY
2. 47,XXX
3. 47,XXY
4. 45,XO

Moh'd Terbi

Answer: 3 - 47,XXY

Explanations:

- Klinefelter syndrome is a disease that should be considered and ruled out before making the diagnosis of Jacobs syndrome.
- Klinefelter syndrome is another sex chromosome abnormality in which the patient's genotype is 47,XXY.
- Key features of Klinefelter syndrome include tall stature, gynecomastia, small testes, learning disabilities, and, at times, infertility.
- Klinefelter syndrome may also be ruled out via genetic analysis.

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Moh'd Terbi

Research Concepts:

Jacobs Syndrome




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Question 756: A 9-year-old male is brought to the clinic for evaluation. He has no significant past medical history and has been vaccinated as per schedule. For the past two weeks, his mother has noted that his eyes and legs appear swollen. She also mentions that he had a sore throat about ten days ago, for which he took ibuprofen every day. Physical examination shows bilateral periorbital and leg edema. Initial labs are shown below:

	Patient value	Reference range
Hemoglobin	14 g/dL	13.2-17.5 g/dL
Blood urea nitrogen	6 mg/dL	5-20 mg/dL
Serum creatinine	0.8 mg/dL	0.6-1.2 mg/dL
Serum protein	2.0 mg/dL	6.5-8.2 mg/dL
Urine protein	3+	nil
Urine blood	nil	nil

Mohd Terbi

What is the most likely diagnosis?

Choices:

1. Membranous nephropathy
2. Minimal change disease
3. IgA nephropathy
4. Postinfectious glomerulonephritis

Answer: 2 - Minimal change disease

Explanations:

- The patient most likely has minimal change disease. Minimal change disease is the most common nephrotic syndrome in pediatric patients.
- Minimal change disease involves podocyte effacement, resulting in protein leakage.
- 10%-30% of patients may show microscopic hematuria.
- Membranous nephropathy is uncommon in pediatric patients. IgA vasculitis and postinfectious glomerulonephritis are nephritic syndromes.

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Moh'd Terbi

Research Concepts:

Nephrotic Syndrome




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Question 757: A healthy 16-year-old female presents for a well-child exam. Her immunizations are up to date. She is doing well in school, works at the local grocery store, and is a member of the high school swim team. She takes an over-the-counter multivitamin. She denies the use of nicotine or alcohol and is not sexually active. She has no concerns for today. Her vital signs are within normal limits, and growth is appropriate. Her systemic review of systems is unremarkable. The exam is only remarkable for conjunctival injection which she attributes to her time in the chlorinated pool. The patient is wondering what she can do to ensure optimal performance during swim meets. What should be recommended in addition to a healthy lifestyle?

Choices:

1. Continuous measurement of pulse oximetry during endurance training in the pool
2. Beta-adrenergic agonist inhaler therapy before exercise
3. Exercise testing with spirometry to measure a drop in FEV1 with exertion in a controlled environment
4. Referral to sports medicine for evaluation

Mohit Terbi

Answer: 3 - Exercise testing with spirometry to measure a drop in FEV1 with exertion in a controlled environment

Explanations:

- Exercise-induced bronchoconstriction (EIB) can be present in asymptomatic athletes. Not all people with EIB experience dyspnea, chest tightness, cough, or wheezing. Up to 90% of people with asthma have EIB; however, EIB is also present in 20% of the general population.
- Symptoms are not sensitive or specific for the diagnosis of EIB. A validated questionnaire is not yet available. The American Thoracic Society (ATS) has a protocol for exercise testing in a controlled environment that has good sensitivity and specificity for EIB diagnosis.
- This patient has a risk factor for EIB. She spends time in a pool. Her conjunctival injection suggests the pool is chlorinated, and she may be inhaling large amounts of trichloramine during practice.
- This patient is unlikely to have underlying asthma as she is 17 years old and has not been previously diagnosed. She is an active athlete without symptoms, and therefore, empiric treatment with a short-acting bet agonist would not be recommended. It may be appropriate if she is diagnosed with EIB. In patients with EIB, oxygen saturation does not predictably decrease and is not used for diagnosis. A referral to sports medicine would be indicated if she had a specific complaint.

Mona Terbi

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Research Concepts:

Exercise Induced Asthma

StatPearls Knowledge Base

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Question 758: A 16-year-old male is diagnosed with major depression following the loss of his friend in a car accident. A few years later, he starts to deny the fact that he had ever been close to that person. He has also completely forgotten about the accident. The patient denies any complaints and shows no other symptoms. What is the classical pattern of behavior shown by the patient?

Choices:

1. Schizoid fantasy
2. Repression
3. Regression
4. Sublimation

Moh'd Terbi

Answer: 2 - Repression

Explanations:

- Defense mechanisms are typically unconscious and are used to reduce anxiety.
- Repression, which is also known as motivated forgetting, occurs when a patient subconsciously pulls unwanted thoughts or memories into their unconscious mind.
- According to Sigmund Freud, defense mechanisms are used to deal with conflict and are a function of the ego.
- Schizoid fantasy occurs when a patient retreats into their internal imaginary world to avoid uncomfortable situations. Regression occurs when patients exhibit behavioral patterns from their early childhood period. Sublimation is the displacement of the emotions in a constructive and socially acceptable manner.

Mohd Terbi

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Research Concepts:

Defense Mechanisms




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Question 759: A 2-year-old boy is brought to the office for a routine visit. His mother denies any concerns. She is amazed at how quickly he is growing up and learning new things. However, when specific developmental questions, including the number of words in his vocabulary or how many block towers he can build, are asked, the mother is unable to give you a clear answer. Which of the following is the next best step in the management of this patient?

Choices:

1. Early intervention program
2. Complete the modified checklist for autism in toddlers-revised
3. Reassess in six months
4. Complete the ages and stages questionnaires

Moh'd Terbi

Answer: 4 - Complete the ages and stages questionnaires

Explanations:

- Clinical surveillance though necessary, is not enough to rule out developmental delays.
- Screening through validated age-matched instruments is recommended to detect delays in development.
- Children at ages 18 and 24 months should be screened for autism spectrum disorders, in addition to general developmental delays.
- If a concern arises after surveillance and screening, the provider should refer for early intervention. Watchful waiting is discouraged.

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Moh'd Terbi

Research Concepts:

Cognitive Development




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Question 760: A 2-day-old girl is being evaluated in the clinic. She was born with a midline occipital skin-covered 8 cm sac. Magnetic resonance imaging shows arachnoid tissue and cerebrospinal fluid inside the sac with minimal atrophic brain tissue. There is evidence of moderately enlarged lateral ventricles. There is no evidence of Chiari malformation or Dandy-Walker malformation. Which of the following factors is most likely to determine the chances of developmental delay in this patient?

Choices:

1. Arachnoid inside the sac
2. Size of the sac
3. Location of the sac
4. Ventricle size

Moh'd Terbi

Answer: 4 - Ventricle size

Explanations:

- Hydrocephalus and the presence of other intracranial abnormalities are significant predictors for developmental delay. Hydrocephalus is present in 34% of all patients before surgical repair of the defect, while it develops in 4% of them after the defect is closed.
- Many factors play a role in the prognosis of an encephalocele, like the location, the size, the amount of brain inside the sac, the presence of dural sinuses in the sac, and the presence of the hydrocephalus.
- Seizure disorder, microcephaly, and the amount of normal brain tissue in the sac are significantly associated with poor outcomes.
- Occipital encephaloceles can be associated with Chiari malformation, Dandy-Walker malformations, and callosal or migrational anomalies.

Moh'd Terbi

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Research Concepts:

Encephalocele




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Question 761: A 9-year-old girl presents to the clinic complaining of right ear pain. She is a keen swimmer. On examination, her ear is swollen and erythematous, and palpating her right ear produces exquisite pain. Otoscopy reveals a swollen external ear canal, full of yellow discharge and debris, and the tympanic membrane cannot be visualized. Which of the following is the best initial therapy for this patient?

Choices:

1. Topical ofloxacin
2. Oral amoxicillin
3. Intravenous ampicillin
4. Ibuprofen

Moh'd Terbi

Answer: 1 - Topical ofloxacin

Explanations:

- The diagnosis of this child is otitis externa.
- This presentation of an external ear canal full of debris, red and swollen, is typical of otitis externa.
- This is primarily treated using topical antibiotics, and oral or intravenous antibiotics have no role in managing this condition.
- Otitis externa can lead to cellulitis of the ear, which can look like perichondritis of the pinna. However, you must be aware of an alternative diagnosis and always examine the ear thoroughly.

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Moh'd Terbi

Research Concepts:

Pinna Perichondritis




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Question 762: A 30-year-old primigravida gives birth via spontaneous vaginal delivery. The neonate is in respiratory distress and develops cyanosis. The nurse starts bag and valve ventilation, but the patient's hypoxemia persists. On examination, no breath sounds are heard on the left side, and the abdomen has a scaphoid shape. Cardiac auscultation reveals displaced heart sounds. Which of the following is pertinent to the underlying pathophysiological mechanism?

Choices:

1. Unilateral lung hypoplasia
2. Disturbance in the formation of the pleuroperitoneal membranes
3. A marked increase in the airway generations, terminal bronchioles, and alveoli
4. The thinning of the pulmonary medial arterial walls

Moh'd Terbi

Answer: 2 - Disturbance in the formation of the pleuroperitoneal membranes

Explanations:

- This patient most likely has a congenital diaphragmatic hernia (CDH). CDH is a condition resulting from the herniation of abdominal contents into the thoracic cavity resulting in lung hypoplasia and altered pulmonary vascular development.
- Any disturbance in the formation of the pleuroperitoneal membranes can result in diaphragmatic discontinuity and congenital diaphragmatic hernia.
- The associated herniation of the abdominal viscera into the thoracic cavity can interfere with normal lung development and form the basis for the two main pathological findings noted in CDH- lung hypoplasia and abnormal pulmonary vascular development. Lung hypoplasia is reflected by a marked decrease in the airway generations, terminal bronchioles, and alveoli.
- The hypoplasia is noted bilaterally, with the lung on the same side of the defect affected more severely than the other lung. There is also an abnormal vascular remodeling of the pulmonary vasculature resulting in the thickening of the arterial medial walls with the potential to develop persistent pulmonary hypertension.

Mona Terbi

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Research Concepts:

Congenital Diaphragmatic Hernia



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Moh'd Terbi

Question 763: A 3-month-old boy with a history of prematurity is being evaluated for motor delay and hypertonia. On physical exam, he has poor head control, stiffness with spastic catches involving all four extremities, and hyperreflexia. Which of the following findings on neonatal head ultrasound is most likely to have confirmed the diagnosis in this patient at that time?

Choices:

1. Mild asymmetry of the bilateral lateral ventricles ventricles
2. Bleeding in the germinal matrix
3. Stroke
4. Bilateral grade 4 intraventricular hemorrhage

Moh'd Terbi

Answer: 4 - Bilateral grade 4 intraventricular hemorrhage

Explanations:

- Grade 4 intraventricular hemorrhage (IVH) is the most severe form of IVH. It is characterized by bleeding in the ventricles and the surrounding brain tissue. Patients with Grade 4 IVH are at high risk for cerebral palsy.
- Cerebral palsy is a clinical diagnosis based on the clinical history and physical exam findings combined with neuroimaging and standardized developmental assessments.
- Clinicians should aim to recognize the signs of cerebral palsy and make the diagnosis of cerebral palsy or “high risk of cerebral palsy” as early as possible. The diagnosis can be made or accurately predicted before age 6 months corrected age using a combination of assessments with strong predictive validity (e.g., brain MRI and the General Movements Assessment) and clinical correlation.
- Early diagnosis and early intervention services can improve functional outcomes and reduce disease burden by optimizing neuroplasticity.

Mon'd Terbi

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Research Concepts:

Cerebral Palsy




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Question 764: A 10-year-old boy is brought in by his mother due to knee pain and frequent dislocation. The patient was born via an uncomplicated delivery and has met all developmental milestones. On examination, there is decreased muscle bulk in his limbs, swan-neck deformity of the digits, and darkened pigmentation around the iris. An x-ray of the pelvis shows bilateral iliac horns, which confirms the diagnosis. Which of the following would be most likely found on further evaluation of this patient?

Choices:

1. Dandy-Walker malformation
2. Hepatic cirrhosis
3. Dysplastic fingernails
4. Cardiac arrhythmias

Moh'd Terbi

Answer: 3 - Dysplastic fingernails

Explanations:

- The presence of bilateral iliac horns is pathognomonic for nail-patella syndrome (NPS). Nail changes are the most common clinical manifestation of NPS, which may include absent, hypoplastic, or dystrophic finger and toenails.
- The classical clinical tetrad of NPS includes elbow deformities, presence of iliac horns, and absent or hypoplastic patellae.
- Both surgical and non-surgical treatment options exist for patients with NPS and knee symptoms.
- Dandy-walker malformation, hepatic cirrhosis, and cardiac dysrhythmias are each not associated with NPS.

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Moh'd Terbi

Research Concepts:

Nail Patella Syndrome




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Question 765: A 14-year-old male with no significant past medical history presents with complaints of fever and pain in his right lower leg for the past two days. He plays softball and soccer regularly but denies any history of a recent injury. Physical examination is notable for erythema and tenderness on the metaphysis of the proximal right tibia. Vitals reveal a temperature of 100.4°F (38°C), pulse rate of 110 beats per minute, respiratory rate of 18 breaths per minute, and blood pressure of 110/70 mmHg. X-ray examination of the leg is normal. A magnetic resonance imaging (MRI) scan is ordered which reveals the presence of periosteal elevation and bone marrow edema. Blood cultures and bone biopsy are ordered, and the patient is started on antibiotics. Which of the following microorganisms is the most likely cause of this patient's presentation?

Choices:

1. Staphylococcus aureus
2. Streptococcus pneumoniae
3. Streptococcus pyogenes
4. Coagulase-negative staphylococcus

Moh'd Terbi

Answer: 1 - Staphylococcus aureus

Explanations:

- Osteomyelitis is an acute or chronic inflammatory process involving the bone and its structures secondary to infection with pyogenic organisms, including bacteria, fungi, and mycobacteria.
- Bone biopsy (either open or percutaneously) is essential to establish the histopathological diagnosis in osteomyelitis, identify the causative pathogen, and provide susceptibility data that helps direct antibiotic therapy.
- Staphylococcus aureus is the most common microorganism isolated from infected bone cultures in osteomyelitis. it is the most common cause of osteomyelitis in children in the United States and accounts for up to 78% of the infections. Up to one-third of these infections may be due to methicillin-resistant strains.
- Coagulase-negative staphylococci-associated osteomyelitis occurs in infants and children with indwelling catheters. Streptococcus pyogenes may also cause osteomyelitis in children, particularly after a varicella-zoster infection, however, the rate of occurrence is around 8%. Group B streptococci-associated osteomyelitis tends to occur in infants. Streptococcus pneumoniae-associated osteomyelitis generally occurs in children who are at increased risk of invasive pneumococcal infections, and usually have underlying illnesses such as chronic heart disease, sickle cell disease, asplenia, etc.

Mohsen Tarbi

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Research Concepts:

Osteomyelitis

StatPearls Knowledge Base

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Moh'd Terbi

Question 766: A 17-year-old male patient presents to the emergency department with complaints of generalized abdominal discomfort, fever, and confusion. Laboratory findings are significant for a white blood cell count of 13400 cells/mm^3, polymorphonuclear 89% and radiological workups reveal that the patient has free air under the diaphragm. Abdominal ultrasound is remarkable for a non-compressible dilated end loop with a 7 mm diameter at the right lower quadrant. IV fluid resuscitation is initiated, and the patient is scheduled for surgery. The past medical history is unremarkable and the patient denies any recent travel history. Which of the following medical treatments is recommended?

Choices:

1. Ertapenem1 g IV once
2. Piperacillin-tazobactam 3.375 g IV once
3. Ceftriaxone 2 g IV once daily, and metronidazole 500 mg IV or PO every 8 hours
4. Levofloxacin 750 mg IV or PO three times daily

Mohamed Terbi

Answer: 3 - Ceftriaxone 2 g IV once daily, and metronidazole 500 mg IV or PO every 8 hours

Explanations:

- Signs of bowel perforation include dizziness, lightheadedness, hypotension, severe abdominal pain, shortness of breath, tachycardia, and referred shoulder pain.
- Initial management of the patient with gastrointestinal perforation includes intravenous (IV) fluid therapy, cessation of oral intake, and broad-spectrum antibiotics.
- Perforated appendix or appendiceal abscess is categorized in the low-risk community-acquired intra-abdominal infections group. However, risk factors for antibiotic resistance or treatment failure should be excluded. Such risk factors include recent travel history to the high rates of antibiotic-resistant organisms sites, known colonization with antibiotic-resistant organisms, advanced age, immunocompromised patients.
- Common antibiotics include cephalosporins combined with an aminoglycoside or metronidazole.

Moni Terbi

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Research Concepts:

Bowel Perforation




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Question 767: A patient presents with fatigue, weakness, shortness of breath. The heartbeat is irregular. The patient has a severe normocytic normochromic anemia and a low reticulocyte count. Which organism is most likely to lead to these signs and symptoms?

Choices:

1. Parvovirus
2. Pseudomonas aeruginosa
3. Mumps virus
4. Mycoplasma pneumoniae

Moh'd Terbi

Answer: 1 - Parvovirus

Explanations:

- Parvovirus commonly causes failure of erythropoiesis result in fatigue, weakness, irregular heartbeat, and shortness of breath.
- Especially subtype B19.
- Bone marrow usually recovers in one week.
- This is most often significant in patients with underlying hemolytic anemias.

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Research Concepts:

Moh'd Terro

Parvoviruses




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Question 768: A 1-year-old child presents with oral ulcers and erythematous macules on the palms. He has had low-grade fevers for two days, nasal drainage, and decreased oral intake that has kept him home from daycare. What is the most likely pathogen?

Choices:

1. Coxsackievirus A16
2. Herpes simplex virus
3. Cytomegalovirus
4. Group A beta-hemolytic streptococcus

Moh'd Terbi

Answer: 1 - Coxsackievirus A16

Explanations:

- Hand, foot, and mouth disease is most commonly caused by Coxsackievirus A16 and enterovirus A71.
- Hand, foot, and mouth disease is most commonly seen in children under five years old.
- Hand, foot, and mouth disease is a clinical syndrome that presents with an erythematous macular rash that develops into vesicles and ulcerations. The rash may be macular, maculopapular, or vesicular. All three lesions may occur at the same time. The rash is also seen on the palms, soles, and buttocks.
- Hand, foot, and mouth disease manifests with a characteristic rash but is also commonly a prodrome of low-grade fever, upper respiratory symptoms, decreased oral intake, and malaise.

Wahid Terbi

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Research Concepts:

Hand Foot And Mouth Disease




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Question 769: A 4-year-old male with sickle cell anemia presents to the emergency department with sudden onset of pallor, fatigue, and severe anemia. On abdominal examination, a mass is palpable in the left upper quadrant. Parents report that a similar episode occurred two years ago. In counseling the family about preventing future events, which fact should be shared with the family to help them decide on a course of treatment?

Choices:

1. Patients with sickle cell anemia are at decreased risk of this condition
2. Treatment with hydroxyurea will prevent future episodes
3. Treatment with splenic artery embolization is the standard of care
4. The risk of these episodes typically diminishes after the age of 5

Moh'd Terbi

Answer: 4 - The risk of these episodes typically diminishes after the age of 5

Explanations:

- This patient with a history of sickle cell anemia, sudden onset of pallor, fatigue, and splenomegaly (mass in the left upper quadrant) is most likely suffering from acute splenic sequestration crisis. It occurs most commonly before the age of 5 in children with sickle cell anemia.
- Splenic sequestration is rare after age 5 in sickle cell anemia due to autoinfarction of the spleen as the child grows older.
- Children with other hemoglobinopathies such as hemoglobin SC disease have relatively preserved splenic size and function and can remain at risk for sequestration crises into adulthood.
- The optimal strategy for preventing future episodes of sequestration crises remains controversial.

Mon'd Terbi

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Research Concepts:

Splenic Sequestration Crisis




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Question 770: A 4-week-old boy is brought to the clinic for a well-child visit. During the examination, the infant's head is noticed to stay behind when pulled to sit up. Up to what age is this finding considered normal?

Choices:

1. 6 months
2. 2 months
3. 5 months
4. 4 months

Moh'd Terbi

Answer: 4 - 4 months

Explanations:

- Head control is typically complete by 4 months of age.
- While performing the pull to sit task, the normal response is that the infant straightens the head and maintains it aligned with the trunk; head lag occurs when the head lags behind the trunk due to poor head and trunk control.
- Adequate head control is important to achieve postural control and subsequent motor, social, and language milestones.
- Once head control is achieved, there is a top-down muscle recruitment progression that allows for other motor milestones to appear.

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Moh'd Terbi

Research Concepts:

Infant Head Lag




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Question 771: A female with abnormal thyroid newborn screening results is evaluated on day 7 of life. She was the 7 lb 4 oz (3290-grams) product of a full-term, uncomplicated pregnancy, labor, and delivery. Mother has a history of autoimmune hypothyroidism, well-controlled with levothyroxine therapy. On physical examination at age 7 days, weight is 7 lb 5 oz (3320 grams) (50th% percentile), length 20 inches (50.8 cm) (50th percentile), and head circumference 14 inches (35.6 cm) (75th percentile). She has no goiter and no physical abnormalities. Laboratory studies show newborn screening results on day 2 of life; total T4 9 ug/dL (normal >8 ug/dL); thyroid-stimulating hormone 42 uIU/mL (normal 34 uIU/mL). Serum thyroid function tests on day 7 of life; free T4 0.8 ug/dL (0.9-2.1 ug/dL); TSH 26.4 uIU/mL (0.9-10 uIU/mL). She has a normal thyroid ultrasound. She is prescribed levothyroxine 25 micrograms by mouth daily after the confirmatory serum thyroid function test is obtained on day 7 of life. She has had a normal thyroid function test on repeat testing at each follow-up visit every 2-3 months during the first 3 years of her life. At her follow-up visit at age 3 years, she has normal growth and development. Her body weight is 15 kg (90th%). Her thyroid function test is normal while on levothyroxine 25 micrograms daily. Which of the following is the best course of action?

Mon's Tech

Choices:

1. Continue levothyroxine therapy as she most likely has permanent hypothyroidism due to her family history of hypothyroidism
2. Order thyroid radio nuclear uptake scan
3. Check thyroid autoantibodies to evaluate for autoimmune hypothyroidism
4. Discontinue levothyroxine and repeat thyroid function test in 2 weeks

Answer: 4 - Discontinue levothyroxine and repeat thyroid function test in 2 weeks

Explanations:

- Congenital hypothyroidism can be permanent or transient. Permanent congenital hypothyroidism can be thyroid dysgenesis (agenesis, ectopic or hypoplastic thyroid gland) or dyshormoneogenesis (a defect of thyroid hormone biosynthesis). The transient form can be due to maternal anti-thyroid medications or maternal thyroid blocking antibodies (in mother with autoimmune thyroid disease).
- This patient is suspected of having a transient form of congenital hypothyroidism because of maternal history of autoimmune hypothyroidism, normal thyroid ultrasound, and the fact that her levothyroxine dosage has never been increased.
- Patients suspected to have a transient form of congenital hypothyroidism should have a trial off of therapy at age 3 years. The thyroid function test is normal after being off levothyroxine for 2 weeks and needs to be repeated in 1-2 months to ensure normal thyroid hormone status. Patients requiring a daily levothyroxine dose less than 2 ug/kg/day at 3 years of age have a greater likelihood of successful discontinuation of treatment.
- Thyroid radio nuclear uptake is optional at diagnosis of congenital hypothyroidism. Neonates with transient hypothyroidism due to thyroid blocking antibodies will have no uptake on the thyroid scan but have a normal or enlarged thyroid on ultrasonography. In this patient in the clinical vignette, a thyroid scan is likely normal at age 3 years because the maternal thyroid blocking antibodies have disappeared by this age. A trial of levothyroxine therapy is, therefore, the best course of action to confirm a transient nature of hypothyroidism.

Mehri Tehrani

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desired).

Research Concepts:

Congenital Hypothyroidism




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Moh'd Terbi

Question 772: A 16-year-old female presents to the clinic for follow-up. She was diagnosed with type 1 diabetes mellitus a few months ago after being admitted to the hospital with diabetic ketoacidosis. She was started on 10 units of insulin glargine at bedtime and 2 units of insulin aspart with each meal. She reports feeling fatigued most days but is otherwise doing well. Home glucose readings reveal an average fasting glucose level of 80 mg/dL. She reports symptomatic hypoglycemia multiple times a week, primarily postprandial. Her physical examination, including vital signs, is normal. Today's hemoglobin A1c is 5.8%, which is improved from 10.5% at the time of diagnosis. What is the best next step in the management of this patient?

Choices:

1. Continue current insulin regimen and recheck hemoglobin A1c in 1 month
2. Continue insulin aspart dose and decrease insulin glargine by 2 units
3. Stop insulin aspart and increase insulin glargine dose by 2 units
4. Stop insulin aspart and decrease insulin glargine by 2 units

Elon's Tenth

Answer: 4 - Stop insulin aspart and decrease insulin glargine by 2 units

Explanations:

- This patient presents with multiple hypoglycemic episodes per week, primarily postprandial. Because she is only using 2 units of aspart with meals, the most appropriate management at this time is to stop premeal aspart and decrease the insulin glargine dose.
- In type 1 diabetes mellitus, patients initially have functional impairment of the normal residual beta cells in addition to autoimmune destruction of beta cells. With therapy and improvement in glycemic control, the remaining functional beta cells can recover and start to produce insulin again.
- This is often referred to as the “honeymoon phase.” It is essential to continue insulin during this phase to prevent the recurrence of diabetic ketoacidosis. However, insulin doses should be decreased to minimize hypoglycemia, and prandial insulin may not be necessary.
- Therapy for type 1 diabetes should always include basal exogenous insulin to prevent hyperglycemia and ketoacidosis.

Ilmi Terbit

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Research Concepts:

Diabetes Mellitus



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improvement.

Moh'd Terbi

Question 773: A 17-year-old man presents with significant muscle weakness, which began three days ago. Before this muscle weakness, the patient experienced a fever, sore throat, headache, vomiting, fatigue, and nausea. The patient has no significant medical history and takes no medications. He is originally from Nigeria. He is not up to date on routine vaccinations and does not recall ever receiving a vaccination. His vital signs show oxygen saturation 98% on room air, respiratory rate 17 per minute, heart rate 65 bpm, blood pressure is 122/82 mmHg, and temperature 98.0 F. On examination, the patient, has 1/5 muscle strength in the upper and lower extremities. His patellar, calcaneal, bicep and brachial reflexes are absent. PCR confirms the diagnosis. What is the most likely mode of transmission of infection in this patient?

Choices:

1. Respiratory droplets
2. Fecal-oral
3. Bodily fluids
4. Animal vector

Moh'd Terbi

Answer: 2 - Fecal-oral

Explanations:

- The patient's symptoms are consistent with poliomyelitis, which is transmitted by poliovirus through fecal-oral transmission.
- Poliovirus is an enterovirus and a member of the family of Picornaviridae.
- Patients generally initially experience flu-like symptoms, which progress to muscle weakness and absent reflexes. Once the virus enters the body, it replicates in target organs and causes seeding to the central nervous system, typically in the anterior horn cells, leading to spinal polio, the most prevalent variant.
- Polio has not yet been eradicated from Nigeria, the patient's country of origin. The patient is also not up to date with routine vaccinations. Polio vaccines are very effective in preventing the disease. Once an individual is infected, there is no effective treatment.

Mohamed Terbi

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Research Concepts:

Poliomyelitis




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Question 774: A 17-year-old female presents for evaluation of vaginal discharge and bilateral pelvic pain. She is sexually active with one partner and does not use condoms. She has had no fever or chills. Pelvic examination shows mucopurulent cervical discharge and cervical motion tenderness. Which of the following treatment regimens is most likely to eradicate her infection and resolve her symptoms?

Choices:

1. Ceftriaxone 500 mg IM x 1 dose
2. Ceftriaxone 500 mg IM x 1 dose and metronidazole 500 mg PO BID for 14 days
3. Ceftriaxone 500 mg IM x 1 dose and doxycycline 100 mg PO BID plus metronidazole 500 mg PO BID for 14 days
4. Cefoxitin 2 gram IM x 1 dose and probenecid 1 gram PO

Moh'd Terbi

Answer: 3 - Ceftriaxone 500 mg IM x 1 dose and doxycycline 100 mg PO BID plus metronidazole 500 mg PO BID for 14 days

Explanations:

- Historically, ceftriaxone had been used for gonorrhea monotherapy in the past. However, because of the emergence of resistant organisms and to prevent the further development of antimicrobial resistance, dual therapy of gonorrhea is preferred. While azithromycin 1 g is first-line therapy for Chlamydia trachomatis cervicitis and urethritis, it would be insufficient for treating pelvic inflammatory disease. Cefoxitin can be an alternative therapy to ceftriaxone but the dosage would be 2 grams and it would need to be supplemented with doxycycline. Ciprofloxacin is not recommended due to increasing resistance.
- Aztreonam is a second-line therapy for urogenital gonorrheal infection. It would not be appropriate for treating initial gonorrheal pelvic inflammatory disease. Metronidazole is now recommended due to the findings of anaerobic bacteria in pelvic inflammatory disease.
- The combination of ceftriaxone 500 mg IM x1 dose in conjunction with 14 days of doxycycline 100 mg BID plus metronidazole 500 mg BID is currently the CDC-recommended treatment option for pelvic inflammatory disease secondary to gonorrhea and chlamydia.
- The combination of 1 dose of ceftriaxone 500 mg IM in conjunction with 1 dose of azithromycin 1 g PO is effective for gonococcal urethritis or cervicitis but not sufficient for pelvic inflammatory disease. Cefoxitin 2 gram IM with probenecid 1 gram plus doxycycline 100 mg BID and metronidazole 500 mg BID for 14 days is an acceptable alternative therapy.

Mona Terbi

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Research Concepts:

Gonorrhea




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Moh'd Terbi

Question 775: A baby girl born at 28 weeks of gestation is admitted to the neonatal ICU due to a weight of 1114 grams. Sonogram shows a left intraparenchymal hemorrhage adjacent to the germinal matrix with mild ventricular hemorrhage. Head circumference is measured daily and had been increasing rapidly with a full fontanelle. Which risk factor predisposed this patient to the rapid head growth?

Choices:

1. Preterm of 28 weeks of gestation
2. Weight of 1114 grams
3. Female sex
4. Intraparenchymal hemorrhage

Moh'd Terbi

Answer: 4 - Intraparenchymal hemorrhage

Explanations:

- The only statistically significant associated risk factor for post-hemorrhagic hydrocephalus is the severity of the periventricular/intraventricular hemorrhage. Gender, age, weight are not significant factors. This patient presents Grade IV, which is the worst.
- One of the primary complications following intraventricular hemorrhage is post-hemorrhagic hydrocephalus; this can be a communicating or non-communicating form that occurs as a result of impaired cerebrospinal fluid reabsorption or by obstruction of the foramen of Monroe.
- Posthemorrhagic hydrocephalus should be suspected in any preterm infant with intraventricular hemorrhage that presents with a rapidly increasing head circumference.
- There are multiple proposed treatment strategies for hydrocephalus with elevated intracranial pressure, including subgaleal shunt placement, ventricular reservoir placement, or ventriculoperitoneal shunt placement.

Michael Terry

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Research Concepts:

Periventricular And Intraventricular Hemorrhage




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improvement.

Moh'd Terbi

Question 776: A 16-year-old girl who works part-time in a pet shop was admitted to the hospital with high-grade intermittent fever, migratory polyarthralgia, and rigors. The clinical exam was unremarkable except for a grade 3 holosystolic murmur in the apex. She had no history of sore throat. The patient was admitted, and lab work was done, which showed normal complete blood count, chest X-ray, and urine analysis were negative. Aerobic blood culture was sent. The patient was kept in the hospital for observation and was given intravenous fluids and antipyretics. Antibiotics were withheld since no clear source was identified. On day five, the blood culture returned negative. However, the patient was still having symptoms. What is the next best step?

Choices:

1. Check for anti-streptolysin O (ASO) titer
2. Do lumbar puncture to rule out West Nile fever
3. Send anaerobic cultures
4. Send fungal cultures

Med'd Terbi

Answer: 3 - Send anaerobic cultures

Explanations:

- Streptobacillus moniliformis can only grow in a culture that has no sodium polyanethol sulphonate, which is used as an anticoagulant in aerobic blood culture bottles.
- Anaerobic culture bottles should be used since they do not contain sodium polyanethol sulphonate.
- The patient probably has Streptobacillus moniliformis. She is a pet shop worker; she probably is exposed to rodents. She has symptoms suggestive of Rat-bite fever. Often there is no sign of rat-bite by the time the patient is seen. She probably developed infective endocarditis and has a cardiac murmur. (The negative aerobic blood culture by day 5 makes other common bacterial cause for infective endocarditis unlikely in this case).
- Penicillin G or ceftriaxone intravenously is the mainstay of treatment for Streptobacillus moniliformis.

Michi Terbi

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Research Concepts:

Rat-bite Fever




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Question 777: A 3-year-old girl comes to the hospital with her mother because of the extra digits present on the lateral side of her foot. The mother says this extra toe was present in her child from birth. The patient has never seen a medical provider. The clinician wants to correct the extra finger by surgical excision. Before surgery, what important investigation should be done on this patient?

Choices:

1. Chest x-ray posterior-anterior view
2. Anterior-posterior and lateral x-ray of the foot
3. Complete blood count
4. Urine routine microscopic examination

Moh'd Terbi

Answer: 2 - Anterior-posterior and lateral x-ray of the foot

Explanations:

- This patient has fibular polydactyly. Surgery may be needed for cosmesis and to improve the quality of life. Before surgery, a bony outline should be detected accurately by radiologic evaluation of the foot in this patient.
- The bony outline can be clearly delineated through an anterior-posterior and lateral x-ray of the foot in order to better treatment, and extra digits can be excised accurately.
- Usually, surgery is done at approximately 1 year. Careful consideration is needed before and during the surgical correction due to the multiformity of its configuration, so radiographic evaluation is needed.
- Usually, an x-ray of the foot is enough to evaluate the bony outline of an extra digit of the foot, so investigation like a chest x-ray or others is rarely needed.

Mehdi Terbi

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Research Concepts:

Polydactyly




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Question 778: A 16-year-old male presents to the emergency department with a sudden onset of headache after he ingested some pills given to him by his friend at a party. On physical examination, he has left-sided ptosis with a smaller left pupil compared to the right pupil. He has left-sided past-pointing and dysdiadochokinesia. He has an upgoing plantar response on his right side. There is impaired pain and temperature sensation on his left face and right arm and leg. His urine toxicology screen shows the presence of methamphetamine. MRI of the brain shows an infarct affecting his left posterolateral medulla. Which of the following clinical features is most diagnostic of his vascular syndrome?

Choices:

1. Left-sided ptosis with a smaller pupil compared with his right side
2. Left-sided past-pointing and dysdiadochokinesia
3. Impaired pain and temperature sensation on his left face and right arm and leg
4. Upgoing plantar response on his right side with a positive urine toxicology screen

Mon'd Terbi

Answer: 3 - Impaired pain and temperature sensation on his left face and right arm and leg

Explanations:

- Wallenberg syndrome presents with sensory deficits that affect the extremities and trunk on the opposite side of the infarction.
- In addition, there is a loss of temperature sensation and pain on the opposite side of the body and the same side of the face.
- The crossed clinical features are the key to the diagnosis of brainstem syndrome. The impairment of spinothalamic sensation on the contralateral side with trigeminothalamic sensation on the ipsilateral side localizes the lesion to the dorsolateral medulla.
- Dysphagia, dysphonia, and Horner syndrome are features of Wallenberg syndrome, yet they are not keys to the diagnosis. A positive urine toxicology screen indicates the underlying cause of his stroke syndrome.

Moh'd Terbi

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Research Concepts:

Wallenberg Syndrome




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Question 779: A 2-year-old boy is brought to the office by his mother for a wellness visit. The family had immigrated to the USA from South Africa 2 months ago. The child was born full-term, and all his vaccinations are up to date. He started walking six months ago, and he can speak up to 20 words. The child was breastfed until the age of 18 months, and now his diet consists of soft fruits and meat. On examination, frontal bossing, bilateral thickened wrist and ankle joints, bilateral bowed femur, and tibia are observed. What is the underlying etiology for the abnormalities observed in this child?

Choices:

1. Defective growth plate mineralization
2. Increased activity of osteoclast
3. Defective production of type 1 collagen
4. Replacement of solid calcified bone with fibrous tissue

Moh'd Terbi

Answer: 1 - Defective growth plate mineralization

Explanations:

- Clinical finding in this child is suggestive of rickets. Rickets is a skeletal disease that affects the growing bones and is attributed to the deficiency of vitamin D. Patients with rickets have stunted bone growth and multiple bone deformities. Most common risk factor for developing rickets is poor intake of vitamin D, insufficient exposure to the sunlight, and malabsorption.
- Vitamin D plays a pivotal role in calcium homeostasis and maintains the normal calcium level via effects on the intestine, parathyroid gland, kidney, and bone. Decreased vitamin D level leads to hypophosphatemia and hypocalcemia. This results in poor calcium deposition in the developing cartilage and delayed bone mineralization. Defective mineralization is most notable at the sites of endochondral growth.
- Dark-skinned individuals are at greater risk for developing vitamin D deficiency as melanin absorbs the UV radiation. Moreover, children who are exclusively breastfed are prone to develop nutritional rickets. Rich sources of vitamin D include fatty fish, dairy, and vitamin D fortified food items.
- Defective production of type 1 collagen results in osteogenesis imperfecta which is characterized by brittle bones and multiple childhood fractures. Replacement of solid calcified bone with fibrous tissue results in fibrous dysplasia, a genetic disorder, in which excessive fibrous tissue is produced. Paget disease is characterized by excessive osteoclast activity followed by new bone production, which results in the large defective bones. This disease is present in individuals > age 55.

Monica Terhi

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Research Concepts:

Vitamin D Deficiency




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Moh'd Terbi

Question 780: A 17-year-old male presents to the emergency department after ingesting slang nut in a suicide attempt. His vital signs include a blood pressure of 128/88 mmHg, pulse of 110/min, a temperature of 99.8 F, and a respiratory rate of 14/min. Treatment for this ingestion predominantly consists of which of the following?

Choices:

1. Gastric lavage and physostigmine
2. Exchange transfusion and methylene blue
3. Hemodialysis and atropine
4. Airway management and benzodiazepines

Moh'd Terbi

Answer: 4 - Airway management and benzodiazepines

Explanations:

- Slang nut is the Southeast Asian plant that contains strychnos nux vomica, or strychnine toxin.
- Strychnine toxicity results in inhibition of the inhibitory neurotransmitter, glycine, causing uncontrolled muscle spasms.
- If a patient presents early before any clinical signs of ingestion, activated charcoal can be administered.
- Treatment is with benzodiazepines, decreasing stimulation, intubation, and neuromuscular blockade if spasms are uncontrolled, patients develop hyperthermia or significant rhabdomyolysis, or airway compromise occurs.

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Moh'd Terbi

Research Concepts:

Strychnine Toxicity




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Question 781: A 7-year-old boy is brought by his mother with complaints of increased abdominal volume, recurrent ear infections, umbilical hernia, and bronchial congestion since birth. His ailment has now progressed to stunted growth, joint stiffness with walking difficulty, vision and hearing problems, and spine deformities. Family history reveals a cousin with the same problem, but he died at eight years. Facial dysmorphism, short neck, and micrognathia are observed on physical examination. Moreover, he has thoracolumbar kyphosis and hepatosplenomegaly. Stiff and painful joints with limitations of active movements are observed. On cardiac examination, a systolic murmur is present in the mitral area. An ECG reveals sinus tachycardia with signs of ventricular and atrial hypertrophy. Echocardiography reveals mitral and aortic insufficiency. Bilateral deafness is present is observed on an audiogram. A chest X-ray reveals cardiomegaly. Urine examination reveals an increased amount of heparan sulfate and dermatan sulfate. Fluorometric tests and the absence of alpha L-iduronidase activity in the blood are observed. What is the management of the patient?

Mohamed Terbi

Choices:

1. Weekly injection of recombinant human alpha L- iduronidase
2. Weekly injection of recombinant human beta-glucuronidase
3. Hematopoietic stem cell transplant
4. Gene therapy

Answer: 1 - Weekly injection of recombinant human alpha L-iduronidase

Explanations:

- Characteristic features of Hurler syndrome include coarse facies, enlarged head with prominent frontal bones, widely placed eye sockets with protruding eyes, flat appearance of the nasal bridge, enlarged lips, and wide-open eyes. The neck is typically short and stiff. These characteristic features were formerly described traditionally in the medical literature by the term gargoylism. The diagnosis is made on clinical examination as well as urine analysis for screening. Enzyme activity assays based on cultured fibroblasts, leukocytes, plasma, and serum are confirmatory and are considered the gold standard. By using an enzyme assay or DNA analysis, it is sometimes possible to distinguish Hurler syndrome from the other closely related subtypes.
- Most therapies for Hurler syndrome are directed towards treating complications and are not specific for an underlying abnormality. Enzyme replacement therapy with recombinant human alpha L-iduronidase is given as a weekly injection. Better outcomes can be achieved if it is given before severe complications ensue. It is used for patients with the Hurler and Hurler-Scheie forms of mucopolysaccharidoses (MPS) I and moderate-to-severe symptoms in patients with Scheie form.
- HSCT is the progressive replacement of enzyme-deficient hematopoietic cells with donor-derived enzyme competent cells. It is the ideal treatment for patients who are under two years of age.
- Research is ongoing with gene therapy in animal models, which includes the delivery of the iduronidase enzyme gene by using viral vectors.

Mon'd Terbi

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Research Concepts:

Hurler Syndrome

StatPearls Knowledge Base

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Moh'd Terbi

Question 782: A 16-year-old female presents for a one-year history of recurrent episodes of a pruritic skin rash. The skin lesions last for fewer than 24 hours and there is no residual scarring. She denies history of fever. She has a past medical history of celiac disease. On examination, there are pink to red papules and plaques with a central pallor of different sizes on her axilla and waistline. Which of the following is the first line of treatment for this patient's condition?

Choices:

1. Cetirizine
2. Omalizumab
3. Ciclosporin
4. Sulfasalazine

Moh'd Terbi

Answer: 1 - Cetirizine

Explanations:

- The patient in this clinical scenario presents with chronic urticaria. The principles of management are to avoid exacerbating factors and to control symptoms as long as the urticaria persists.
- Pharmacological agents are directed at preventing mast cell degranulation and the effects of mast cell mediators released.
- Second-generation H1-antihistamines (e.g., cetirizine, loratadine, fexofenadine), taken regularly, are the first-line pharmacological treatment.
- The dose can be up-titrated to 4 times the standard dose if symptoms remain at 2 to 4-week intervals.

Mohd Terbi

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Research Concepts:

Chronic Urticaria




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Question 783: A 46-year-old man presents to the clinic for evaluation of a growth on his scalp. He states that he has always had this "birthmark," but when he was younger, it was flat, and it became warty in appearance in his early teens. The spot has always been completely bald. The lesion had been asymptomatic until 3 months ago when he noticed a small area with a recurring scab that bleeds easily when he brushes his hair. Which of the following is the best initial step in the management of this patient?

Choices:

1. Reassurance
2. Shave biopsy
3. MRI of the head with and without contrast
4. Cryotherapy

Moh'd Terbi

Answer: 2 - Shave biopsy

Explanations:

- A nevus sebaceus is a benign congenital malformation of the pilosebaceous unit. Nevus sebaceus may be diagnosed clinically in children.
- Most of the secondary tumors arising in a nevus sebaceus are benign adnexal tumors that occur in adults 40 years or older. Trichoblastoma, a benign adnexal tumor, is the most common secondary tumor to arise in nevus sebaceus. However, basal cell carcinoma has been described in nevus sebaceus. The annual incidence is less than 1% but if any areas of the nevus sebaceus present with changes such as erosion or bleeding, a biopsy of the concerning area should be performed.
- Nevus sebaceus is usually a clinical diagnosis; additional workup is typically unnecessary. The exception would be a child with nevus sebaceus syndrome or a large lesion over 10 cm, which may be associated with central nervous system anomalies such as epilepsy or intellectual disability. In this case, referral to neurology or other specialists may be indicated.
- Surgical excision is considered an acceptable treatment for nevus sebaceus in late childhood, once the risk from general anesthesia lessens, or the patient can tolerate the procedure with local anesthesia.

Mohit Tehri

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Research Concepts:

Nevus Sebaceus

StatPearls Knowledge Base

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Moh'd Terbi

Question 784: A mother brings her 2-week-old son in with jaundice and poor feeding. He was born at term via uncomplicated vaginal delivery and discharged home at 48 hours without any apparent complications. His vital signs are within normal limits, and examination is significant for skin jaundice and a palpable liver 2.5 cm below the costal margin. He has been formula-fed since birth. Upon further inquiry, the mother reports that his urine has a "cabbage-like odor." His serum creatinine is 2.1 mg/dL. In addition, the results of his newborn screening show elevated succinylacetone. What is the most appropriate next step in the management of this neonate?

Choices:

1. A lifetime diet with a very limited intake of foods with phenylalanine
2. Switch to a hydrolyzed formula and begin nitisinone
3. Switch to a tyrosine-restricted formula and begin nitisinone
4. Obtain a 24-hour urine sample for succinylacetone levels and then start treatment accordingly

Med'd Terbi

Answer: 3 - Switch to a tyrosine-restricted formula and begin nitisinone

Explanations:

- The patient in this vignette has hereditary tyrosinemia type I (hepatorenal tyrosinemia), an autosomal recessive disorder caused by a deficiency of fumarylacetoacetate hydrolase (FAH). Mutations in the FAH gene located on locus 15q23-q25 are responsible for this disease. FAH enzyme deficiency leads to the accumulation of fumarylacetoacetate (FAA). FAA has a short half-life and is quickly converted to succinyl acetoacetate (SAA) and succinylacetone. The elevated serum levels of these metabolites aid in making the diagnosis and are used in newborn screening.
- Patients typically present with signs of liver failure and renal Fanconi syndrome in the neonatal period.
- The disease can lead to death within the first two years of life without treatment. Tyrosine restricted diet along with nitisinone is the mainstay of treatment.
- Because patients have the most favorable outcome when treatment is initiated in the first 28 days of life, delaying treatment until the results of further tests is inappropriate.

Mehdi Terbi

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Research Concepts:

Hypertyrosinemia



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Moh'd Terbi

Question 785: A 2-year-old girl is brought to the clinic for follow up. She was born to a consanguineous marriage and was diagnosed with hypomelanosis of Ito with left kidney enlargement. Ophthalmological examination reveals a cataract of the right eye. Neurological examination is normal. Which of the following complications is most appropriate to rule out in this patient?

Choices:

1. Single kidney
2. Strabismus
3. Cystic kidney disease
4. Retinal detachment

Moh'd Terbi

Answer: 3 - Cystic kidney disease

Explanations:

- Renal involvement in hypomelanosis of Ito is sporadic. In this case, the infant had a prenatal diagnosis of left kidney enlargement.
- Here the most appropriate answer is cystic kidney disease because there is a kidney enlargement. These findings must be confirmed post-natally, and we may find decreased corticomedullary differentiation and cysts in the renal cortex.
- Genitourinary complications in hypomelanosis of Ito include single kidney, cystic kidney disease, micropenis, cryptorchidism, and urethral duplication.
- In this case, the renal disease should be confirmed by a renal biopsy.

Mohd Terbi

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Research Concepts:

Hypomelanosis of Ito




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Question 786: A newborn infant born at 37 weeks gestation presents as a transfer from a referring hospital with exposed bowel from a full-thickness defect to the right of the umbilicus. The infant's lower body and exposed bowel have been placed in a bowel bag through which the bowel contents are visible and well perfused. An orogastric tube was placed during the transportation of the infant. Which of the following is the next best step in the management of this patient?

Choices:

1. Ultrasound abdomen
2. Operative reduction of bowel
3. Genetic testing
4. Intravenous fluid resuscitation

Moh'd Terbi

Answer: 4 - Intravenous fluid resuscitation

Explanations:

- Infants with gastroschisis require peripheral intravenous fluid at 2 to 2.5 times maintenance to make up for the evaporative losses from the exposed bowel.
- Long transportation intervals since birth require careful evaluation of the amount of fluid an infant received at birth and during transportation.
- Eventually, operative reduction and closure of gastroschisis in the setting of a newborn infant protects the bowel.
- Ultrasound of the abdomen is useful in a newborn infant with gastroschisis. An infant born with gastroschisis has baseline genetic risks for chromosomal abnormalities is not of immediate importance in the resuscitation of a newborn infant with gastroschisis.

Moh'd Terbi

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Research Concepts:

Gastroschisis




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Question 787: A 2-year-old boy is brought to the clinic with delayed growth and walking. The patient also has delayed speech and cognitive milestones. On physical examination, the boy has short stature, coarse facial features, flat nose bridge, macroglossia, and short thick fingers. He also has a history of recurrent middle ear infections. The hearing test shows decreased hearing, and respiratory examination shows thick copious respiratory secretions. The clinician suspects an X linked recessive disorder. Which of the following therapies is most likely to improve the patient's condition?

Choices:

1. Thyroid hormone replacement
2. Zinc supplementation
3. Recombinant Iduronate sulfatase 2 enzyme
4. Fluoxetine

Moh'd Terbi

Answer: 3 - Recombinant Iduronate sulfatase 2 enzyme

Explanations:

- Hunter syndrome is an X-linked recessive disease resulting in decreased activity or absence of iduronate sulfatase 2 enzyme.
- The approved treatments for Hunter syndrome are recombinant enzyme replacement therapy and hematopoietic stem cell transplantation.
- The recombinant IDS enzyme is administered to patients intravenously once a week. It helps in the reversal of somatic symptoms when administered to the patients before six years of age.
- ERT (enzyme replacement therapy) causes minimal improvement in cognitive symptoms as it could not cross the blood-brain barrier.

Mohd Terbi

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Research Concepts:

Mucopolysaccharidosis Type II




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Question 788: A 4-week-old female neonate is being monitored for breastmilk jaundice. Her total serum bilirubin is 9mg/dL. Which additional test result is most likely in this condition?

Choices:

1. Increased hepatic bilirubin-UGT activity
2. Conjugated bilirubin 0.5mg/dL
3. Hemoglobin 5mg/dL
4. Weight 200g below birth weight

Moh'd Terbi

Answer: 2 - Conjugated bilirubin 0.5mg/dL

Explanations:

- Breast milk jaundice is an example of an unconjugated, or indirect, hyperbilirubinemia, and is a benign and usually self-limiting condition. An elevated conjugated, or direct, bilirubin level should prompt immediate further evaluation.
- Infants with breast milk jaundice have normal weight gain and normal urine and stool production. Breast milk jaundice should not be diagnosed in the presence of inadequate weight gain or failure to thrive.
- Hepatic bilirubin-UGT conjugates bilirubin within the liver. Newborns have lower activity than adults. Decreased or absent activity is seen in Crigler-Najjar syndrome.
- Severe anemia is not associated with breast milk jaundice. Hemolytic anemia can cause an elevated bilirubin level.

Mon'd Terbi

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Research Concepts:

Breast Milk Jaundice




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Question 789: A 2-month-old baby is brought in by his parents for his monthly check-up. They proudly say that he has started to lift his head and keep his hands open most of the day. He does not make any sounds and is not easily distracted by noises. They also say he loves to smile. The examination confirms the findings of the parent's story. What is the most appropriate next step in the management of this patient?

Choices:

1. Reassure and routine follow-up
2. Gross motor assessment
3. Fine motor assessment
4. Hearing screening

Moh'd Terbi

Answer: 4 - Hearing screening

Explanations:

- This patient has decreased attention towards noises.
- This raises the concern for decreased hearing ability.
- The patient should be screened for hearing loss.
- If the patient is not screened and timely intervention is not done, the patient may never develop appropriate language skills all his life.

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Research Concepts:

Moh'd Terbah

Child Development



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Question 790: A 2-year-old patient has a blanket that she carries with her at all times. Her mother is concerned that if she does not get rid of it, she will remain attached to this blanket forever. The assessment of the age-appropriate developmental index was unremarkable. What should be advised?

Choices:

1. Yes, it is important at age 2 to get rid of it
2. Children should be weaned from their favorite toy or blanket gradually so that going without it is not so traumatic
3. This normal attachment may last throughout the preschool years
4. Try to reason with the child that this habit needs to be broken

Moh'd Terbi

Answer: 3 - This normal attachment may last throughout the preschool years

Explanations:

- Infants and toddlers often become attached to a particular toy or blanket, and seem especially attached to it at night or when they are upset.
- About 60 percent of children develop such an attachment.
- This attachment may last through the preschool years.
- Most professionals agree that there is no need to interfere with this process.

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Moh'd Tenji

Research Concepts:

Developmental Stages of Social Emotional Development In Children




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Question 791: A 16-year-old girl is brought in after falling onto her outstretched right arm while ice skating. On examination, there is right elbow deformity, and the patient is unable to move it. Her right arm is neurovascularly intact distal to the elbow. X-rays do not show a fracture. What is the most appropriate next step in the management of this patient?

Choices:

1. Closed reduction with acute placement of a hinged external fixator in the operating room
2. Closed reduction with acute surgical repair of the lateral collateral ligament complex
3. Closed reduction with splint application and early active range of motion
4. Closed reduction with splint application and no active range of motion for 2 weeks

Moh'd Terbi

Answer: 3 - Closed reduction with splint application and early active range of motion

Explanations:

- Simple elbow dislocations are elbow dislocations that do not involve a fracture. The initial management should consist of closed reduction in the emergency department with the placement of a posterior long arm splint.
- The relative stability of the elbow during a simple arc of motion should guide treatment progression. If the elbow is stable, it is important to start an early active range of motion to prevent stiffness as the elbow is very susceptible to becoming stiff with immobilization. With a stable elbow, the splint should not remain in place for more than 5 to 7 days.
- The active range of motion should begin after 5 to 7 days. Not only to prevent stiffness but to provide dynamic, compressive stability to the elbow joint while healing.
- Surgical intervention may be necessary but should not be done acutely for a simple elbow dislocation. Conservative measures should be attempted and failed before attempting surgery.

Mohit Tariq

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Research Concepts:

Anterior Elbow Dislocation




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improvement.

Moh'd Terbi

Question 792: A 17-year-old boy is brought to the emergency department via ambulance. The patient is found unresponsive by a friend, who states he took prescription pills earlier. Vital signs reveal blood pressure 105/73 mmHg, heart rate 35/min, respiratory rate 3/min, and temperature of 37 C. The patient remains unresponsive despite a sternal rub. His skin is cool and clammy. Which of the following medications is most likely to reverse the patient's symptoms?

Choices:

1. Ethanol
2. N-acetylcysteine
3. Flumazenil
4. Chlordiazepoxide

Moh'd Terbi

Answer: 3 - Flumazenil

Explanations:

- The patient described above is undergoing an overdose from sedative-hypnotic drugs. This class of drugs includes benzodiazepines, barbiturates, and Z-drugs.
- Benzodiazepines are GABAa receptor agonists. Symptoms of overdose with these drugs include respiratory depression, hypotension, bradycardia, and coma.
- Flumazenil is the antidote for benzodiazepine overdose.
- Ethanol can be used in methanol or ethylene glycol intoxication. Administering ethanol in this scenario would worsen the patient's CNS depression. Chlordiazepoxide is used in alcohol withdrawal, and N-acetylcysteine is used in acetaminophen overdose.

Mohd Terbi

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Research Concepts:

GABA Receptor




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Question 793: A 2-year-old boy is brought to the office by their parents when they suddenly noticed an abdominal mass this morning. The parents deny any fever, abdominal pain, and trauma to the child. The child passes urine and stool. On examination, the vitals are stable. An abdominal examination reveals palpable irregular mass that crosses the midline. There is no tenderness on palpation. Complete blood count with differential is normal. Urine examination shows increased homovanillic acid. Which of the following is the most likely finding in the histology of this mass?

Choices:

1. Homer-Wright pseudorosettes
2. Perivascular pseudorosettes
3. Rosenthal fibers
4. Psammoma bodies

Moh'd Terbi

Answer: 1 - Homer-Wright pseudorosettes

Explanations:

- Neuroblastoma is the most common tumor of the sympathetic nervous system (97%) and the most common malignancy of infancy with a median age of diagnosis of 17 months. It accounts for 15% of pediatric cancer-related deaths.
- Histologic confirmation is required to establish a diagnosis of neuroblastoma. Histologically, small round pale blue cells, known as Homer-Wright pseudorosettes, can be seen.
- Since neuroblastoma cells originate from neural crest cells destined to differentiate into sympathetic peripheral neurons, cells often produce catecholamines; break-down products of these catecholamines are homovanillic acid (HVA) and vanillylmandelic acid (VMA). Thus, in over 90% of neuroblastoma, elevation in these catecholamine breakdown products in urine is diagnostic.
- Wilms tumor may have a similar presentation, but it does not cross the midline.

Mehdi Terbi

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Research Concepts:

Neuroblastoma




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Question 794: A 2-year-old female without significant past medical history presents to the clinic with a non-productive cough for five weeks. She has been treated three times in various Emergency Departments with different antibiotics and nebulizer treatments for pneumonia. On exam, the right lung is clear, but breath sounds are decreased on the left. A chest X-ray demonstrates air trapping. What is the next best step in management?

Choices:

1. Fluoroscopic exam of the lungs
2. CT of the chest
3. Bronchoscopy
4. Sweat chloride test

Moh'd Terbi

Answer: 3 - Bronchoscopy

Explanations:

- Air trapping in the left lung indicates airway obstruction. This can be due to any cause but in a child of this age suspicion for the foreign body should be very high.
- This child should be scheduled for urgent rigid bronchoscopy, which will be both diagnostic and therapeutic.
- Other imaging modalities can confirm the air trapping, and may suggest a more precise location, but are unnecessary once the finding has been demonstrated on plain-film radiography.
- An intra-lumenal opacity in a bronchus demonstrated on any imaging modality warrants direct visualization.

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Moh'd Terbi

Research Concepts:

Airway Foreign Bodies




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Question 795: A 6-month-old boy is brought to the hospital by his maternal grandmother. She found him lying on the ground when she visited the mother's house. The 21-year-old mother lives with the child and his 23-year-old father. The mother runs her own company and makes good money while the father is unemployed. The grandmother visits them quite often and has noticed the child has been bruised at times. Fundoscopy revealed retinal hemorrhages as well. Physical examination of the child shows multiple bruises on the limbs and head. The child appears anxious and is crying inconsolably. Which of the following is the strongest risk factor accounting for the clinical entity observed in the child?

Choices:

1. Both parents staying together
2. Maternal high income
3. Parents' young age
4. Grandmother's support

Moh'd Terbi

Answer: 3 - Parents' young age

Explanations:

- Risk factors for abusive head trauma may include behaviors and situations that involve the child, the family, and the caregiver.
- Infants who inconsolably cry are at risk of a frustrated caregiver responding with violent shaking. As a consequence, abusive head trauma peaks during this same period.
- Risk factors for abusive head trauma include behavioral health problems, domestic violence history, frustration intolerance, lack of childcare experience, lack of prenatal care, low education level, low socioeconomic status, single-parent families, and young parents without support.
- The parents living together, mother's high socioeconomic status, and the grandmother's support make child abuse less likely.

Mohud Terbi

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Research Concepts:

Pediatric Abusive Head Trauma




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Question 796: A 17-year-old male presents after being involved in a low-speed motor vehicle collision in a parking lot. Paramedics who attended the scene reported that both cars were reversing at less than 5 miles per hour, colliding back bumpers only and causing no damage. The patient reports feeling anxious and admits that he generally gets nervous in hospitals or clinics. The patient has no past medical history, and he is not on any medications. He denies any pain, shortness of breath, or neurologic symptoms. His physical examination is normal, other than the fact that he appears anxious. His vital signs show temperature 98.6 F (37 C), heart rate 101 beats per minute, blood pressure 190/100 mmHg, respiratory rate 20 breaths per minute, and oxygen saturation of 98% on room air. What is the most appropriate initial step in the management of this patient?

Choices:

Mon'd Terbi

1. Give a dose of 0.1 mg clonidine orally and recheck the blood pressure in one hour
2. Place the patient in a quiet, dimly lit room, place a peripheral IV, and give 10 mg hydralazine IV
3. Place the patient in a quiet, dimly lit room to minimize stimulation while awaiting results of lab tests
4. Place the patient in a quiet, dimly lit room to minimize stimulation and give 5 mg of oral amlodipine

Answer: 3 - Place the patient in a quiet, dimly lit room to minimize stimulation while awaiting results of lab tests

Explanations:

- Anxiety and pain are potential instigators of acute blood pressure elevation. This patient does not have any findings suspicious for end-organ dysfunction, so aggressive IV therapy is not indicated.
- This patient is clearly anxious, so placing the patient in a more calming environment may be the only treatment necessary to improve his blood pressure, and does not pose any risk of over-treating and causing relative hypotension.
- Immediate treatment of a hypertensive urgency should be focused on determining whether or not there are more subtle signs of end-organ dysfunction, instructing the patient on potential causes and lifestyle modifications to manage their blood pressure, and obtaining close primary care follow-up within a week to recheck blood pressure, initiate or titrate medications as necessary, and further reinforce lifestyle modifications.
- This patient is not on antihypertensives, so initial treatment with clonidine, or another oral antihypertensive, would be inappropriate.

Mom's Tenth

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Research Concepts:

Hypertensive Urgency



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Moh'd Terbi

Question 797: The provider is evaluating a newborn male. He was born at 35-week of gestation to a 25-year-old mother who conceived after successful treatment with intracytoplasmic sperm injection (ICSI). The reason for intracytoplasmic sperm injection was severe oligozoospermia of her husband. On examination of the baby, the urethral meatus is located on the ventral side over the distal shaft of the penis, ventrally curved penis, and abnormal dorsal hood of the foreskin. The scrotum is well-formed and contains both the testicles. What is the next step in management?

Choices:

1. Karyotyping
2. Surgical correction in six to eighteen months
3. Request GnRH level
4. Transabdominal sonography

Moh'd Terbi

Answer: 2 - Surgical correction in six to eighteen months

Explanations:

- Hypospadias is characterized by abnormal positioning of the urethral meatus on the ventral side of the penis, abnormal ventral curvature of the penis, and dorsal hood of the foreskin.
- Surgical correction of hypospadias improves the cosmetic appearance of the penis and the urinary and sexual function. The role of hormone therapy in hypospadias is controversial and is not supported by evidence.
- Surgery done in early life reduces the psychological morbidity and the risk of postoperative complications. The ideal time for undergoing surgery is between 6 and 18 months of age.
- Endocrine evaluation is critical in the presence of posterior hypospadias, ambiguous genitalia, and cryptorchidism. Karyotype and testing for 17-hydroxy-progesterone are recommended. Ultrasound examination of the genitourinary system should be considered in individuals with posterior and complex hypospadias.

Mohsen Terbi

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Research Concepts:

Hypospadias Urogenital Reconstruction




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Question 798: A 4-year-old male immigrant from Mongolia is brought to the clinic with bowed legs, weakness, and is small for his age. Which of the following additional features is most likely to be seen in this patient?

Choices:

1. Multiple rib fractures at different stages of healing
2. A rise in the chest wall with expiration
3. A lateral sulcus at the 6th rib
4. A point of maximal impulse located on the right side midclavicular line in the fifth intercostal space

Moh'd Terbi

Answer: 3 - A lateral sulcus at the 6th rib

Explanations:

- Harrison's groove or sulci is a common physical exam finding in children with rickets.
- Harrison's groove is a lateral groove located at the 6th rib.
- Rickets makes infections of the chest more common which may be a cause of Harrison's groove in rickets patients.
- Harrison's groove is one of the clinical signs of rickets, along with rachitic rosary and delayed closure of fontanelle.

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Research Concepts:

Moh'd Zerbi

Anatomy, Abdomen and Pelvis, Harrison Groove




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Question 799: A 39-year-old woman delivered a female infant at 39 weeks. The newborn is found to have webbed fingers and toes, abnormally flat bottom, and absent anal opening. Attempts to breastfeed this baby have been unsuccessful, resulting in coughing with regurgitation after every feed. The patient is started on intravenous fluids for hydration, and a pediatric surgeon is consulted. The surgeon would be available after about two hours. What is the next best step in the management of this patient?

Choices:

1. Lateral film radiograph in prone position
2. Place a nasogastric tube and feed through it
3. Place a nasogastric tube and connect to the suction
4. Place foley catheter

Moh'd Terbi

Answer: 3 - Place a nasogastric tube and connect to the suction

Explanations:

- This newborn patient likely has VACTERL syndrome. This congenital syndrome is characterized by vertebral defects, anal atresia, cardiac defects, tracheoesophageal fistula, renal defects, and limb defects. A nasogastric tube should be placed in an infant.
- Failure to pass a nasogastric tube may indicate underlying esophageal atresia.
- Early placement of a nasogastric tube for stomach decompression is vital in the management of patients with anorectal malformations. This helps to rule out the diagnosis of esophageal atresia and decompress the stomach. Stomach decompression avoids the risk of vomiting and eventual aspiration.
- A lateral film radiograph is important in the evaluation of a patient with anorectal malformation and helps with the determination of the level of atresia (high versus low). But this test is usually deferred until 24 hours after birth, when abdominal distension has developed, and gas should track up to the end of the rectal stump. Performing the radiograph earlier may lead to a false diagnosis of high anorectal malformation. Even if a nasogastric tube may be placed successfully, feeding is not advised as bowel obstruction will result in eventual vomiting and possible aspiration. Patients with anorectal malformation may have a complex fistulous connection between the rectum and genitourinary tract. Foley catheter placement should not be attempted by anyone other than the pediatric surgeon until after careful examination of the perineum.

Mohit Tariq

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Research Concepts:

Imperforate Anus




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Moh'd Terbi

Question 800: A 3-day-old boy is being evaluated in the newborn nursery. He is noted to have purulent discharge from both eyes, preauricular lymphadenopathy, and conjunctival injection. Transmission of his condition most likely occurred by which mechanism?

Choices:

1. Poor hand hygiene from hospital staff
2. Droplet transmission from parents
3. Exposure to infectious vaginal secretions
4. Intra-uterine transfer for infection

Moh'd Terbi

Answer: 3 - Exposure to infectious vaginal secretions

Explanations:

- In neonates, the transmission of N. gonorrhoeae and subsequent development of gonococcal conjunctivitis often occurs during delivery and exposure to infectious vaginal secretions.
- Despite prophylaxis, approximately 10% of neonates exposed to gonorrheal exudates during delivery may develop gonococcal conjunctivitis.
- Conjunctivitis due to medication side effects is most commonly seen from the application of silver nitrate. This is typically noted in the first 24 hours of life.
- While hand hygiene amongst hospital staff is important, N. gonorrhoeae does not typically survive more than a few minutes outside the human body.

Mohd Terbi

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Research Concepts:

Gonococcal Conjunctivitis




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Section 9

Question 801: A 2-day-old male infant is being evaluated in neonatal intensive care. He was born at term to a 35-year-old primigravid woman via spontaneous vaginal delivery. The mother states that she had poor antenatal care as she has been staying in Brazil for the past 8 months. The mother reports an episode of flu-like illness with fever, joint pains, and redness of eyes during her second month of pregnancy. The infant developed respiratory distress and had to be intubated. His examination reveals the presence of microcephaly and craniosynostosis and a partially collapsed skull. There is a generalized increase in tone and numerous congenital contractures. Imaging studies reveal thin subcortical cortices with sub-cortical calcifications. The etiological agent is isolated from the patient's serum. A virus with which of the following morphologies is most likely responsible for the patient's condition?

Mohit Terbi

Choices:

1. Enveloped double-stranded DNA virus
2. Non-enveloped single-stranded DNA virus
3. Enveloped single-stranded positive-sense RNA virus
4. Non-enveloped single-stranded negative-sense RNA virus

Answer: 3 - Enveloped single-stranded positive-sense RNA virus

Explanations:

- This infant has been born with severe congenital abnormalities. His examination reveals microcephaly with the collapse of the skull and craniosynostosis. There is congenital arthrogryposis and cortical atrophy. Antenatal history of travel to the endemic region and patient's symptoms in the first trimester suggest the likelihood of congenital Zika infection in the infant.
- Zika virus is an arthropod-borne flavivirus and is transmitted by mosquitoes. It is an enveloped, single-stranded, positive-sense RNA virus. It is possible to identify this pathogen in serum, urine, and CSF obtained from the neonate.
- Antibody tests can be used alongside PCR testing. A positive PCR confirms infection while a negative PCR test and a positive IgM antibody against Zika suggest probable infection. Negative PCR does not rule out infection as viremia may be transient.
- Classical congenital abnormalities and maternal travel history to endemic region suggest the presence of Zika. Numerous viral agents can cause congenital abnormalities. However, the Zika virus is a positive sense, single-stranded, enveloped virus.

Mohsin Tariq

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Research Concepts:

Zika Virus



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Moh'd Terbi

Question 802: A 2-year-old boy is brought to the office with complaints of right ear discharge and fever for 3 days. On reviewing the history of the child, he had several upper respiratory tract infections, pneumonia, and otitis media in the past. On examination, the temperature is 101.6 F, the pulse is 80/min, and the oxygen saturation is 96% in room air. Purulent discharge is present in the left ear with a bulging tympanic membrane. The right ear is normal. Complete blood count with differential shows leukopenia. Immunoglobulin examination shows decreased IgA, IgM, IgG. If left untreated, what is the most likely clinical course in this patient?

Choices:

1. Gastrointestinal carcinoma
2. Asymptomatic
3. Death from failure to thrive
4. Pulmonary infarction

Moh'd Terbi

Answer: 3 - Death from failure to thrive

Explanations:

- This is Bruton agammaglobulinemia. Bruton agammaglobulinemia or X-linked agammaglobulinemia (XLA) is an inherited immunodeficiency disorder characterized by the absence of mature B cells, resulting in severe antibody deficiency and recurrent infections.
- This is characterized by low levels of all immunoglobulins
- If left untreated, this child will die from chronic infections and chronic failure to thrive. The first and foremost goal in patients with XLA should be the avoidance of infections. This includes measures to prevent infections by frequent handwashing, maintaining good respiratory hygiene, and, if possible, drinking only treated water.
- The overall function will not increase without treatment.

Moh'd Terbi

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Research Concepts:

Bruton Agammaglobulinemia




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Question 803: A 16-year-old otherwise healthy female on no medications presents complaining of generalized swelling and is found to have a blood pressure of 150/93 mmHg, periorbital edema, 3+ peripheral edema, normal cardiovascular exam, and the following lab values: creatinine 0.7 mg/dL, albumin 2.2 g/L, urinalysis 3+ protein, 0 red blood cells per high power field, 0 white blood cells per high power field, and 1+ oval fat bodies. Which of the following should be avoided?

Choices:

1. Ramipril
2. High carbohydrate diet
3. Low fat diet
4. High sodium diet

Moh'd Terbi

Answer: 4 - High sodium diet

Explanations:

- Therapeutic management for the patient with nephrotic syndrome focuses on treating clinical symptoms of edema triggered by alterations in the basement membrane that lead to increased permeability associated with proteinuria and hypoalbuminemia that affect renal function.
- Nutritional management of the patient with nephrotic syndrome should include a fluid restriction in the presence of sodium restriction. The patient's weight should be monitored daily.
- Hyperlipidemia in the presence of hypoalbuminemia occurs in nephrotic syndrome. Nutritional management aims to prevent fluid volume excess while maintaining an optimal nutritional baseline. The treatment plan includes taking daily height, weight, and blood pressure with results trended, to assess response to therapy.
- Nephrotic syndrome presents as a primary or secondary etiology. Primary etiologies focus on inherent renal pathology. Secondary etiologies include diabetes mellitus, immune dysfunction, and infections. Triggering mechanisms occur for both etiologies, with the most common occurrence of disease following an upper respiratory infection.

Mon'd Tarh

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Research Concepts:

Nephrotic Syndrome



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Moh'd Terbi

Question 804: During the evaluation of a 5-year-old girl with autism, the mother discloses that she is concerned regarding her daughter's performance at school. The provider suspects she might have a learning disability. Which one of the following interventions shows the greatest benefit for children with learning disabilities?

Choices:

1. Avoidance of talking books
2. Having children repeat a grade
3. Phonological awareness training
4. Vision therapy

Moh'd Terbi

Answer: 3 - Phonological awareness training

Explanations:

- Learning what sounds are associated with letters is important in learning to read.
- Repeating a grade has not been shown to be beneficial.
- Vision therapy is used for "lazy" eyes, strabismus, and convergence insufficiency but not learning disabilities.
- Talking books can be helpful and do not interfere with reading.

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Research Concepts:

Moh'd Terro

Learning Disability




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Question 805: A 16-year-old female patient presents with itching and ear pain that started four days ago. Symptoms have not improved, and pain now worsens when she pulls the ear. She has had fevers to 39 C (102.2 F), nausea and vomiting. Ear examination show redness and a swollen canal. The tympanic membrane cannot be visualized. History reveals she vacationed at her friend's lakehouse one week ago. Which cephalosporin can be used to treat her ear infection?

Choices:

1. Cefadroxil
2. Cefuroxime
3. Ceftriaxone
4. Cefepime

Moh'd Terbi

Answer: 4 - Cefepime

Explanations:

- This patient is displaying signs and symptoms of malignant otitis externa (swimmer's ear).
- Otitis externa is commonly caused by Pseudomonas aeruginosa.
- Fourth-generation cefepime has coverage against Pseudomonas aeruginosa.
- Ceftazidime, a third-generation cephalosporin, has coverage against pseudomonas aeruginosa.

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Research Concepts:

Moh'd Terbi

Cephalosporins




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Question 806: A 6-year-old girl presented to the emergency department with right arm pain and deformity after a fall from the trampoline. On physical exam, there is right arm deformity just above the elbow. The arm appears well perfused and pink. There is a break in the skin (approx 0.5xm) on the posterior upper arm above the elbow joint. Brachial and radial pulses, as well as sensations in the arm, are intact. There is a limited range of movement of the involved extremity due to pain. Intravenous access is established, and Morphine dose is given for pain. X-ray of the elbow joint shows displaced supracondylar fracture. What should the next step in management?

Choices:

1. Orthopedic consult and intravenous antibiotics
2. Orthopedic consult, intravenous antibiotics and tetanus immunization confirmation
3. Orthopedic consult, tetanus immunization confirmation
4. Orthopedic consult, splinting under sedation

Moh'd Terbi

Answer: 2 - Orthopedic consult, intravenous antibiotics and tetanus immunization confirmation

Explanations:

- Open fractures have a high risk of infection due to exposure of bone and deep tissue to the environmental pathogen.
- Antibiotics prophylaxis is indicated in any type of open fracture.
- Duration and type of antibiotic prophylaxis should be discussed with orthopedic service. It varies with the type of fracture and level of contamination ranging form 24 hrs for simple fracture and clean wound to 48 hrs or more for complicated fracture and grossly contaminated wound.
- Tetanus immunization is recommended for any open fracture or wound. Prior tetanus immunization status needs to be assessed. Those who have completed tetanus immunization (at least three doses) and received last dose 5years or more years previously, an age-appropriate booster dose of tetanus toxoid vaccine should be administered. The unimmunized patient should start and complete a primary series of the vaccine.

Mohit Tiwari

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Research Concepts:

Elbow Fractures Overview




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Question 807: A 17-year-old woman presents to the emergency department with episodes of seizures that have extensively been worked up with neuroimaging and video-EEG monitoring. All tests were normal, including EEG obtained during prior events. Neurology assessment was that the events are non-epileptic spells. What is the most likely psychiatric process that is associated with this patient?

Choices:

1. Post-traumatic stress disorder
2. Malingering
3. Conversion disorder
4. Bipolar disorder

Moh'd Terbi

Answer: 3 - Conversion disorder

Explanations:

- Psychogenic non-epileptic events are thought to most commonly represent conversion disorders.
- The patient is not consciously aware of acting out these events and is not attempting to deceive caregivers.
- Conversion disorders may be challenging to treat, but there is no benefit from antiepileptic medications.
- Malingering implies that the individual is feigning events to control the environment. Sometimes this may be evident when there is obvious secondary gain from the action. Conversion disorder is thought to be causative in most patients with non-epileptic seizures. Post-traumatic stress disorder, depression, or anxiety disorder may be present in individuals with psychogenic non-epileptic seizures but are not thought to be causative.

Mon'd Terbi

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Research Concepts:

Psychogenic Nonepileptic Seizures




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Question 808: A 4-month-old male infant is being evaluated for failure to thrive. The patient was born at 38 weeks via normal vaginal delivery, and the mother's pregnancy was normal. On examination, the patient has macroglossia, diaphragmatic breathing, hepatosplenomegaly, and is unable to roll over. On vertical suspension, the patient slips through the examiner's hands. Mother has also been having difficulty feeding the baby. Electrocardiographic findings are significant for wide QRS complexes and a short P-R interval. An uncle on the mother's side died a few months after birth, but she does not know the exact cause. What is the treatment for the disease the patient has in the above-mentioned scenario?

Choices:

1. Intravenous immunoglobulins
2. Enzyme replacement therapy
3. Low protein diet
4. Supportive care and observation

Moh'd Terbi

Answer: 2 - Enzyme replacement therapy

Explanations:

- Pompe disease (PD), a rare autosomal recessive disease, is caused by the deficiency of acid alpha-glucosidase deficiency.
- Presents in the neonatal period with marked hypotonia, failure to thrive, hepatomegaly, and often leads to death within the first year of life due to cardiac or respiratory causes if untreated. Characteristic electrocardiographic findings are wide QRS and a short P-R interval.
- It can present as the classic infantile PD, which has less than 1% enzyme activity or as a juvenile, and the adult-onset forms have a less severe presentation with the enzyme activity ranging from 1 to 40%.
- Enzyme replacement therapy is a US Food and Drug Administration-approved treatment for infantile PD, and earlier treatment initiation has been associated with better outcomes.

Mohd Terbi

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Research Concepts:

Hypotonia




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Question 809: A 1-week-old, small for gestational age neonate, was noted to have microcephaly and hepatosplenomegaly at birth. Prenatal ultrasounds had also detected periventricular calcifications. The neonate has been diagnosed with congenital infection. At the time of discharge, the neonate is doing fine. What information is crucial to include in the discharge instructions for the parents?

Choices:

1. Ensure frequent feeds as the baby was small for gestational age
2. Isolate this baby from other newborns to prevent the spread of disease
3. Attend all hearing screen appointments
4. No future pregnancies as all offspring will be infected with CMV

Moh'd Terbi

Answer: 3 - Attend all hearing screen appointments

Explanations:

- The incidence of sensorineural hearing loss is 35% in neonates with symptomatic CMV. Hearing loss, which is the hallmark of CMV, may be present at birth or present later in life; this underscores the importance of regular hearing screens in children affected by CMV.
- CMV is the most common cause of non-genetic sensorineural hearing loss in children. Symptomatic congenital cytomegalovirus leads to long term sequelae, including sensorineural hearing loss, mental and developmental disabilities, and impaired vision. Around 10% of symptomatic newborns will die in the neonatal period, a number that may be low.
- Asymptomatic babies are not spared long-term sequelae, with 10 to 12% developing hearing loss and a smaller percentage of developing neuromotor disabilities and vision problems.
- Hearing loss may not be present at birth, as such regular monitoring of hearing is important.

Moh's Tehbi

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Research Concepts:

Congenital Cytomegalovirus Infection




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improvement.

Moh'd Terbi

Question 810: A 4-week-old male born outside the United States is brought into the clinic for evaluation. The mother reports he was well at birth and weighed 3400 g (7.5 lbs). However, he has been ill since birth. She reports that he developed vomiting and diarrhea a few days after birth and has had poor feeding since then. He has been exclusively breastfed. Physical examination reveals jaundice, hepatomegaly, and early cataract formation. His weight is at the 10th percentile for his age. What is the most likely diagnosis?

Choices:

1. Pyloric stenosis
2. Galactosemia
3. Aldolase deficiency
4. Neonatal hemochromatosis

Moh'd Terbi

Answer: 2 - Galactosemia

Explanations:

- The deficiency of galactose-1-phosphate uridyltransferase causes galactosemia.
- Untreated, this can lead to liver failure, cataract formation, and intellectual disability.
- Galactosemia is detected by newborn screening in all 50 states in the United States.
- Treatment is a galactose-free diet.

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Research Concepts:

Moh'd Zarbi

Galactose 1 Phosphate Uridyltransferase Deficiency




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Question 811: A 16-year-old male is evaluated for a complaint of headache, fever, chills, and a non-productive cough. He has a summer job at a pet shop where he is responsible for cleaning bird cages. On physical examination, he is febrile and noted to have a red throat and right basilar crackles. He has an allergy to tetracyclines. What type of antibiotic should be given for the most likely cause of his illness?

Choices:

1. A third-generation cephalosporin
2. A penicillin
3. A macrolide
4. A sulfonamide

Moh'd Terbi

Answer: 3 - A macrolide

Explanations:

- Psittacosis is a zoonotic bacterial infectious disease caused by Chlamydia psittaci. It is an obligate intracellular organism, and treatment for this bacterial infection is based on the intracellular activity and pharmacokinetics of the antibiotic.
- First-line treatment is with tetracycline antibiotics, particularly doxycycline, in the individual without contraindications.
- In pregnancy and in patients where doxycycline is contraindicated, the infection is best treated with macrolide antibiotics, such as azithromycin and erythromycin. Third-line antibiotics active against C. psittaci include fluoroquinolones, which are less effective than tetracyclines and macrolides.
- C. psittaci can infect parrots, canaries, and other birds. The major risk factor is bird exposure, with human transmission occurring by direct contact with infected birds or through inhalational routes via aerosolized organisms in feces, urine, respiratory, and eye secretions of infected birds.

Won'a Tariq

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Research Concepts:

Psittacosis




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Question 812: A 15-year-old boy is brought to the clinic for evaluation. His father looks frustrated and complains about him being clumsy and lazy. The boy reports "no motivation for physical activities." On further questioning, he describes muscle pains and spasms on very little exercise. He also reports episodes of dark-colored urine after playing soccer with his family. Physical examination shows normal development and neurological examination is insignificant. Baseline laboratory tests show a high serum creatine kinase and myoglobin level. Urinalysis confirms myoglobinuria. Which of the following is the most appropriate advice for this patient?

Choices:

1. A carbohydrate-containing drink before exercise
2. Protein-rich diet
3. Avoiding fasting
4. High-calorie granola bars during exercise

Mohsen Terbi

Answer: 1 - A carbohydrate-containing drink before exercise

Explanations:

- McArdle disease is a glycogen storage disease that results in disrupted glycogen metabolism. It is caused by the deficiency of the enzyme glycogen phosphorylase. A sucrose-containing drink taken 45 minutes before exercise improves exercise capacity and helps to lessen the undesirable symptoms.
- Symptoms are often appreciable after exercise and include muscle cramps, muscle pain, and rare contractures. Rhabdomyolysis episodes are common after intense physical activity. Patients usually self-adjust to the disease by avoiding activities that exacerbate the symptoms, for example, avoiding contact sports.
- Labs show chronically high serum CK and myoglobin. Urinalysis shows myoglobinuria. Diagnosis is confirmed by muscle biopsy and genetic sequencing. The most common mutations are R50X in white patients.
- A protein-rich diet is usually not helpful because the primary abnormality is related to carbohydrate metabolism. Similarly, avoiding fasting and eating high-calorie granola bars also provides little benefit.

Moni's Tenth

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Research Concepts:

McArdle Disease



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Moh'd Terbi

Question 813: A 3-day-old girl is being evaluated for poor feeding in the neonatal intensive care unit. She was born at 38 weeks gestation to a 31-year-old mother. The pregnancy was uneventful, except the mother took pyridostigmine throughout the pregnancy for a chronic condition. The Apgar score was 7 and 8 at 1 and 5 minutes of life. She is drinking 2 ounces of formula every 2-3 hours but takes a long time with each feeding. On physical examination, the patient is alert, there are no dysmorphic features, head lag is noticed on the pull to sit maneuver, and she has a slightly decreased suck reflex. Complete blood count, comprehensive metabolic profile, and creatine kinase are within normal limits. What is the most likely diagnosis in this neonate?

Choices:

1. Hypoxic-ischemic encephalopathy
2. Spinal muscular atrophy
3. Zellweger syndrome
4. Transient neonatal myasthenia gravis

Moh'd Terbi

Answer: 4 - Transient neonatal myasthenia gravis

Explanations:

- Pyridostigmine is an FDA pregnancy Category B drug used to treat myasthenia gravis, and it is compatible with lactation. Transient acquired myasthenic syndrome can be seen in neonates born to mothers with myasthenia gravis.
- Antibodies against the acetylcholine receptors in the mother passively cross the placenta and interfere with the neuromuscular transmission in the neonate. The amount of antibodies transferred across the placenta directly correlate with the severity of the symptoms.
- Symptoms include difficulty feeding, swallowing, and sucking and hypotonia. Usually, they have a weak cry with an expressionless face. The symptoms are noticed within 2-3 days of life and resolve within 2-4 weeks with complete recovery.
- Treatment is generally symptomatic, which may include exchange transfusion, respiratory support, and intravenous immunoglobulin (IVIg).

Mona Tarbi

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Research Concepts:

Hypotonia




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Question 814: A patient presents with severe bloody diarrhea, crampy abdominal pain, tenesmus, joint pain, and fever. Stools are a currant-like red. Initially, it appears that he may have ulcerative colitis but microbiology studies reveal the presence of organisms. What is the most likely diagnosis?

Choices:

1. Crohn disease
2. Whipple disease
3. Shigellosis
4. Amoebiasis

Moh'd Terbi

Answer: 3 - Shigellosis

Explanations:

- Shigella causes bacillary dysentery. The gram-negative, non-motile rod is highly contagious and can cause diarrhea with few organisms.
- Shigella can cause reactive arthritis, acute bloody diarrhea, abdominal pain, tenesmus, fever, and passage of small bloody mucoid stools. It is often confused with ulcerative colitis.
- Blood work is non-specific and a colonic biopsy may reveal ulcers, mucus depletion, and cryptic abscesses.
- Diarrhea caused by Shigella often resolves without antibiotic treatment in 5 to 7 days. Antibiotics are useful for severe cases of shigellosis because they can reduce the duration of symptoms. Shigella is often resistant to antibiotics.

Mohd Terbi

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Research Concepts:

Shigella




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Question 815: A 3-month-old male with asymptomatic congenital heart disease presents to the clinic due to poor oral intake for the last 3 days. On evaluation, he appears lethargic. His heart rate is 210 beats/minute. An electrocardiogram is obtained which shows a PR interval to RP interval ratio of less than 1. Which of the following can be expected if his underlying disease process goes untreated?

Choices:

1. Fever
2. Seizure
3. Vomiting
4. Cyanosis and retractions

Moh'd Terbi

Answer: 4 - Cyanosis and retractions

Explanations:

- Infants with supraventricular tachycardia (SVT) can develop heart failure if the tachycardia goes unrecognized.
- Heart failure is more likely when SVT persists for more than 48 hours, whereas SVT lasting less than 24 hours is unlikely to cause heart failure.
- Symptoms of heart failure in an infant include difficulty feeding (from prolonged feeds to intolerance), cyanosis, tachypnea, retractions, and diaphoresis.
- Permanent junctional reciprocating tachycardia (PJRT) is associated with incessant SVT and tachycardia associated with cardiomyopathy. The criteria for PJRT are (1) narrow QRS tachycardia, (2) negative P waves in inferior leads, (3) PR interval to RP interval ratio less than 1, (4) 1:1 AV relation during tachycardia with no evidence of functional AV block, and (5) absent delta waves in the PR segment during sinus rhythm.

Mona Tarbi

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Research Concepts:

Sinus Tachycardia




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Question 816: A 35-year-old woman presents at 40 weeks of gestation and gives birth to a son via spontaneous vaginal delivery. The baby and mother are deemed healthy and are discharged the next morning. The mother brings in her son six weeks later for lethargy and altered facial appearance. On examination of the infant, the nurse notes a large anterior fontanel, coarse facies with a depressed nasal bridge, puffy eyelids, and a large tongue. The infant's reflexes are decreased uniformly. His head circumference and height are age-appropriate. Given the likely diagnosis, which of the following is associated with this infant's condition?

Choices:

1. Umbilical hernia
2. Cerebellar degeneration
3. Meckel diverticulum
4. Spina bifida

Moh'd Terbi

Answer: 1 - Umbilical hernia

Explanations:

- This patient's examination findings are suggestive of congenital hypothyroidism. Congenital hypothyroidism is one of the most common preventable causes of intellectual disability.
- Umbilical hernia is associated with congenital hypothyroidism. An umbilical hernia presents as a bulge at the umbilicus.
- Umbilical hernia in children results from incomplete closure of the fascia of the umbilical ring, through which intraabdominal contents may protrude.
- The classic late manifestations of congenital hypothyroidism usually occur after about six weeks of life. These include coarse facies with depressed nasal bridge, puffy eyelids, large tongue, coarse hair, thick, dry and cold mottled skin, abdominal distension, umbilical hernia, hyporeflexia, bradycardia, hypotension, and anemia.

Mohd Terbi

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Research Concepts:

Congenital Hypothyroidism




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Question 817: A 10-month-old is admitted for the third time for dehydration without any gastrointestinal losses. There is a failure to thrive and the patient is unable to concentrate his urine. Family history shows others with similar symptoms. Select the most likely diagnosis.

Choices:

1. Child neglect
2. Central diabetes insipidus
3. Nephrogenic diabetes insipidus
4. Diabetes mellitus type 1

Moh'd Terbi

Answer: 3 - Nephrogenic diabetes insipidus

Explanations:

- The patient has congenital nephrogenic diabetes insipidus. Infants are hungry despite milk feeding but are satisfied with water. Younger children are at greater risk for severe dehydration than older children. Older children tend to drink a lot of water. Electrolyte abnormalities develop from polyuria and polydipsia. Excessive thirst leads to drinking frequently, even in the middle of the night, which leads to increased urination or bedwetting in some cases.
- There is a mutation of the V2 vasopressin receptor.
- Inheritance is usually X-linked although both autosomal dominant and recessive forms present.
- Unlike with central diabetes insipidus, vasopressin is ineffective; so treatment is with hydration. Saluretic medications are used.

Wahid Terbi

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Research Concepts:

Diabetes Insipidus




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Question 818: A 16-year-old female is brought to the emergency department after she was found lying on the ground with an empty bottle of supplements beside her. While on the way, she had an episode of seizure-like activity. Her blood pressure is 102/62 mmHg, heart rate is 121/min, respiratory rate is 20/min, and temperature 37 C (98.6 F). On exam, she is somnolent and can not answer questions. Arterial blood gases (ABG) include pH 7.29, HCO_3 19 mEq/L, and $PaCO_2$ 32 mmHg. The patient was placed on supplemental oxygen. The family member is not sure about the patient's medical history but remembers she was being evaluated for fatigue and pale skin. What is the most appropriate treatment of her condition?

Choices:

1. Dimercaprol
2. Penicillamine
3. Deferoxamine
4. Dimercaptosuccinic acid

Moh'd Terbi

Answer: 3 - Deferoxamine

Explanations:

- This patient has iron deficiency anemia, given the history of her symptoms. Acute iron toxicity can be seen with symptoms of overdose include initial gastrointestinal upset that slowly develops to acute metabolic encephalopathy, seizures, tachycardia, metabolic acidosis, and arrhythmia.
- Iron overdose can be treated by gastric lavage with an iron chelator such as deferoxamine or gastrointestinal decontamination procedures such as lavage solutions and whole-bowel irrigation. Deferoxamine is particularly important in cases of severe toxicity, including shock and severe acidosis.
- Amounts between 20 to 60 mg/kg is mild to moderately toxic, and > 60 mg/kg can cause severe symptoms and morbidity due to circulatory collapse.
- Dimercaprol is used for the treatment of acute arsenic, mercury, lead, and lewisite poisoning. Dimercaptosuccinic acid is used for the treatment of acute arsenic, mercury, and lead poisoning. Penicillamine is used for the overdose of mainly copper toxicity but occasionally used for gold, arsenic, and lead poisoning. None of these have a role in the treatment of iron toxicity.

Mohit Tehri

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Research Concepts:

Iron Supplementation



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Moh'd Terbi

Question 819: A 17-year-old female presents with fatigue, acne, weight gain, and amenorrhea. She has gained 25 lbs (11 kg) over the past 6 months. She has been amenorrheic for 4 months and multiple pregnancy tests have been negative. She has striae at both flanks, a moon face, and a buffalo hump. What is the most common cause of this condition?

Choices:

1. Adrenal adenoma
2. Exogenous corticosteroids
3. Pituitary microadenoma
4. Ectopic adrenocorticotropic hormone (ACTH) secretion

Moh'd Terbi

Answer: 2 - Exogenous corticosteroids

Explanations:

- The most common cause of Cushing syndrome is the exogenous administration of corticosteroids.
- Cushing disease (endogenous production) is most commonly due to a pituitary microadenoma.
- Adrenal tumors and adenomas may also produce excess cortisol and cause Cushing syndrome but this is far less common.
- Ectopic adrenocorticotropic hormone (ACTH) secretion from various cancers is another cause of Cushing syndrome. The most common tumors that produce ectopic ACTH are lung and renal cancers.

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Moh'd Terbi

Research Concepts:

Cushing Syndrome




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Question 820: A neonate presents with abdominal distention and bilious vomiting for the last 6 hours. His blood pressure is 87/56 mmHg, pulse rate 170 beats per minute, respiratory rate 32 breaths per minute, and temperature 37.7 C (99.8 F). Physical examination is remarkable for a palpable mass in the right lower quadrant. Abdominal x-rays reveal a bubbly, ground-glass appearance in the lower abdomen, predominantly in the right lower quadrant. A nasogastric tube is fixed, and the initial chart reveals 200 ccs of biliary drainage. Intravenous hydration with Ringer lactate is started. What is the most appropriate next step in management?

Choices:

1. Nasogastric lavage with diatrizoate sodium
2. Abdominal CT with IV and oral contrast
3. Enema with sodium meglumine diatrizoate
4. Bowel surgery as soon as possible

Mon'd Terbi

Answer: 3 - Enema with sodium meglumine diatrizoate

Explanations:

- The most likely diagnosis is meconium ileus, in which the terminal ileum is dilated and filled with thick inspissated meconium. This is often the first indication of cystic fibrosis.
- Treatment starts with a water-soluble contrast enema, such as sodium meglumine diatrizoate. This is curative in up to 75% of patients. Bowel perforation occurs in less than 3%.
- If the contrast enema fails to relieve the obstruction, surgery is required. Enterostomy is used to irrigate the bowel with either saline or N-acetylcysteine. When meconium mixes with swallowed air, the classic “soap-bubble” sign is evident in the distal small intestine.
- Patients who are not vomiting typically have an incomplete distal obstruction and usually respond to oral rehydration and osmotic laxatives orally or via nasogastric tube. However, the partial obstruction may lead to aspiration, which is life-threatening in patients with cystic fibrosis.

Mehdi Terbi

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Research Concepts:

Meconium Ileus




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Question 821: A 6-year-old boy presents with a facial rash that appeared today. Last week, he had a fever, headache, and sore throat for three days. His temperature is 98.4 F (36.9 C), and his pulse is 92 beats/min. Skin examination is remarkable for a symmetric, erythematous, macular rash on both cheeks, with relative circumoral pallor. The remainder of his skin examination is normal. Examination of the eyes, oropharynx, chest, and abdomen is within normal limits. Given the likely diagnosis, which of the following is a proven complication of this child's condition?

Choices:

1. Scarlet fever
2. Erosive arthritis
3. Pericarditis
4. Transient aplastic crisis

Moh'd Terbi

Answer: 4 - Transient aplastic crisis

Explanations:

- This child has erythema infectiosum or fifth disease, which is caused by parvovirus B19. Erythema infectiosum presents in most children with a mild, nonspecific prodrome followed by a rash that gives a characteristic "slapped-cheeks" appearance.
- Individuals with underlying hemoglobinopathies may experience a transient aplastic crisis (TAC) triggered by an infection with parvovirus B19.
- TAC typically causes a pure red cell aplasia with significant decreases in hemoglobin concentrations and undetectable or nearly-undetectable peripheral reticulocyte counts. In some individuals, white blood cell and platelet counts may also be decreased.
- Scarlet fever is a manifestation of a group A streptococcal infection. Parvovirus B19 infection may cause arthralgias and non-erosive arthritis, particularly in adult women. Speculation exists regarding an association between parvovirus B19 infection and myocarditis and dilated cardiomyopathy. The evidence is inconclusive, and causality has not been demonstrated.

Mom's Tech

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Research Concepts:

Erythema Infectiosum



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Moh'd Terbi

Question 822: A 3-year-old boy is brought to the clinic for evaluation of his congenital deformity. He is found to have a deformity in his left arm which is consistent with a radial club hand. Which of the following is the next best step in the evaluation of this patient?

Choices:

1. Barium swallow test
2. Echocardiogram
3. Liver function tests
4. Peripheral blood smear

Moh'd Terbi

Answer: 4 - Peripheral blood smear

Explanations:

- Radial club hand is associated with a number of congenital anomalies, including Fanconi anemia, thrombocytopenia absent radius syndrome, and VACTERL/VATER syndromes.
- Fanconi anemia is the most life-threatening association with radial club hand and should be ruled out before any other associated abnormalities.
- Fanconi anemia is an autosomal recessive condition resulting in aplastic anemia and death and is frequently associated with radial deficiency.
- A CBC will show decreased leukocytes, red blood cells, and platelets in a child with Fanconi anemia.

Mohd Terbi

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Research Concepts:

Meromelia




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Question 823: A patient is taken off a tour bus for a sightseeing trip in Toronto and brought to the emergency department after complaining of fever, myalgia, dry cough, and shortness of breath. A similar outbreak has reportedly just been identified in China, where the patient is visiting from. In the emergency department, the patient's temperature is 102.1 F, heart rate is 126/min, respiratory rate is 24/min, blood pressure is 98/56 mmHg, and SpO2 is 90% on room air. Which of the following infection control precautions need to be rapidly initiated for this patient?

Choices:

1. Contact precautions
2. Droplet precautions
3. Airborne precautions
4. Standard precautions

Moh'd Terbi

Answer: 3 - Airborne precautions

Explanations:

- SARS should be suspected in this clinical scenario. SARS, like many other respiratory viruses, is transmitted predominantly person-to-person by droplet mechanism. Additionally, direct contact with contamination from fomites can transmit the disease, and airborne transmission has been suspected.
- SARS is notorious for transmission to healthcare workers, with 1 in 5 cases of the outbreak being in healthcare workers.
- After transmission, the incubation period is typically 2 to 7 days, with 95% of patients developing symptoms by day 10.
- Gloves, gowns, and eye protection should be worn by healthcare personnel. The patient should be placed in an isolated room, preferably a negative pressure one. N95 respirators should be worn or, if N95 unavailable, a surgical mask.

Mohamed Terbi

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Research Concepts:

Severe Acute Respiratory Syndrome




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Question 824: A 34-year-old female P0G1 presents to the emergency room with labor pain. After 17 hours of labor, she delivers a male infant. Upon physical examination of the infant, his left hand appears to be permanently hyperextended at his metacarpophalangeal (MCP) joints and flexed at his proximal interphalangeal (PIP) and distal interphalangeal (DIP) joints. Which of the following is the most likely cause of his condition?

Choices:

1. Traction lesion of C8 and T1 spinal nerves
2. Traction lesion of C3 and C4 spinal nerves
3. Sympathetic chain injury
4. Thoracic duct trauma

Moh'd Terbi

Answer: 1 - Traction lesion of C8 and T1 spinal nerves

Explanations:

- The infant in the vignette is suffering from a condition called Klumpke's palsy. It is likely that upon delivery, he experienced upward force on his arm, resulting in partial paralysis of the lower trunk of brachial plexus, option 1.
- In Klumpke's palsy, nerves C8 and T1 are most frequently affected.
- In adults, Klumpke's palsy is often associated with a trauma experienced by an outstretched arm, i.e., grabbing onto something to break a fall.
- The female in this vignette is in prolonged labor, which is associated with more issues, like Klumpke's palsy.

Mahdi Terbi

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Research Concepts:

Klumpke Palsy




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Question 825: A 4-year-old girl is brought in by her parents with fever, cough, and noisy breathing over the last three days. Her parents report that the noisy breathing is more prominent when she is agitated. There is no reported throat pain, chest pain, drooling, or trauma in their child. She is up to date with her vaccinations. On examination, she is alert and non-ill appearing. Her vitals include a temperature of 101 F (38.3 C) and oxygen saturation of 97% on room air. She demonstrates inspiratory stridor when agitated, which disappears when she is at rest and consoled by her parents. No wheezing is appreciated during lung auscultation. A chest x-ray is negative for acute infiltrates, and a neck x-ray is notable for the steeple sign. Respiratory syncytial virus, influenza virus, and COVID testing are negative. What is the most appropriate treatment for this child?

Choices:

Mohsen Terbi

1. Oral dexamethasone monotherapy
2. Nebulized epinephrine monotherapy
3. Nebulized albuterol monotherapy
4. Oral dexamethasone plus nebulized epinephrine

Answer: 1 - Oral dexamethasone monotherapy

Explanations:

- This patient with inspiratory stridor and the steeple sign is suggestive of croup. The steeple sign refers to a symmetrical narrowing of the subglottic airway seen in croup on an anteroposterior neck radiograph and can be seen in around 50% of patients.
- Croup is another name for laryngotracheobronchitis. It commonly has a viral etiology, the most common being the parainfluenza virus. Other causes include influenza A and B, measles, adenovirus, and respiratory syncytial virus (RSV).
- The most commonly used system for classifying the severity of croup is the Westley croup score ranging from 0 to 17 points divided by five factors: stridor, retractions, cyanosis, level of consciousness, and air entry. This child has a Westley score of 1 (inspiratory stridor on agitation). Children with mild croup defined as a Westley croup score of less than 2 are given a single dose of oral dexamethasone.
- Children with moderate to severe croup are given oral dexamethasone plus nebulized epinephrine. Nebulized albuterol plays no role in the treatment of croup.

Mehdi Taribi

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Research Concepts:

Croup



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Moh'd Terbi

Question 826: A 12-month-old male is brought to the clinic by his mother with a complaint of fever and coughing for the past week. He has a history of recurrent otitis media and pneumonia. His growth parameters are appropriate for his age and on auscultation of the lungs, there are crackles over the right lung base. A chest x-ray confirms the presence of a right lower lobe consolidation. Immunodeficiency is suspected, and IgG levels are less than two standard deviations for age-adjusted reference range levels. Follow-up at 36 months, shows normal IgG levels in repeated blood work. What could be the primary underlying pathology in this patient?

Choices:

1. Defect in the Bruton Tyrosine Kinase (BTK) gene
2. Suppression of fetal immunoglobulin production
3. Defect in T cell function
4. Absence of Natural killer cells

Moh'd Terbi

Answer: 2 - Suppression of fetal immunoglobulin production

Explanations:

- The child most likely has a diagnosis of transient hypogammaglobulinemia of infancy (THI). The proposed cause of THI is the suppressive effect of maternal antibodies (IgG) on fetal immunoglobin production, which crosses the placenta during intrauterine life.
- Like X-Linked Agammaglobulinemia (XLA), THI manifests around 6 months, as maternal antibodies wane.
- By age 3, most children with THI reach age-appropriate IgG levels, while the rest 40% develop normal levels by age 5.
- Children with THI can mount an antibody response to protein immunizations as opposed to the absence of antibody response to protein immunizations in infants with XLA. This is determined by measuring antibody titers to diphtheria and tetanus before vaccine administration and after administration in 3-4 week intervals to assess response.

Mona Terbi

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Research Concepts:

Agammaglobulinemia




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Question 827: A 12-year-old boy from China with normal growth and development is known to have hepatitis B infection: hepatitis B surface antigen positive, antibody to hepatitis B core antigen positive and antibody to hepatitis B surface antigen negative. A mother of one of your patients who is in the same classroom is concerned, because her son has only received one dose of hepatitis B vaccine 1 year ago. You recommend that her child does which of the following?

Choices:

1. Begin the three-dose series of hepatitis B vaccine again immediately
2. Complete the three-dose series of hepatitis B vaccine with 2 more doses
3. Receive hepatitis B immune globulin and hepatitis B vaccine
4. Have blood drawn for hepatitis B serology and be given hepatitis B vaccine, if seronegative

Moh'd Terbi

Answer: 2 - Complete the three-dose series of hepatitis B vaccine with 2 more doses

Explanations:

- There is no increased risk of transmission of hepatitis B infection in the school setting.
- An exception is that residents and staff of institutions for people with developmental disabilities represent a high-risk group for hepatitis B virus infection and should be immunized.
- In this clinical situation involving the school setting, the classmate of the 12-year-old who is the hepatitis B surface antigen positive should complete the three-dose series.
- It is not necessary to begin the series again even though the last dose of vaccine was 1 year previously.

Mohd Terbi

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Research Concepts:

Hepatitis B




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Question 828: A 7-month-old infant presents to the clinic for evaluation of his fifth toe deformity. His physical examination reveals that the fifth toe is noted to overlap dorsally over his fourth toe. What is the most likely cause of this deformity?

Choices:

1. Contraction deformity of the extensor digitorum longus to the fifth toe
2. Laxity of the extensor digitorum longus to the fifth toe
3. Contraction deformity of the flexor digitorum longus to the fifth toe
4. Laxity of the flexor digitorum longus to the fifth toe

Moh'd Terbi

Answer: 1 - Contraction deformity of the extensor digitorum longus to the fifth toe

Explanations:

- Overlapping toe is a congenital deformity of the fifth toe that results in dorsiflexion, and adduction of the toe at the metatarsophalangeal (MTP) joint, resulting in overlapping toe over the fourth toe.
- Overlapping toe is caused by a contraction deformity of the extensor digitorum longus.
- Overlapping toe results in dorsiflexion of the MTP joint and is related to extensor muscle pathology.
- The flexor tendon complex to the fifth toe is not involved in the overlapping toes.

Mahdi Terbi

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Research Concepts:

Fifth-Toe Deformities




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Question 829: A 17-year-old male patient presents to the emergency department with acute onset chest pain and shortness of breath. He does not have any past medical history. On examination, he is tall and lean with a blood pressure of 135/85 mmHg, a heart rate of 90 beats per minute, a respiratory rate of 20 breaths per minute, and oxygen saturation of 94% on room air. The trachea is central and the apex beat is not displaced. His breath sounds are absent on the left side of the chest, and his percussion note is hyperresonant. What is the best next step in management?

Choices:

1. Urgent chest x-ray
2. Obtain an arterial blood gas
3. Computed tomography pulmonary angiogram (CTPA)
4. Tube thoracostomy

Moh'd Terbi

Answer: 1 - Urgent chest x-ray

Explanations:

- When pneumothorax is suspected in a stable patient, a chest x-ray provides additional information beyond confirmation.
- A chest x-ray can be used to evaluate the extent of pneumothorax and its potential causes.
- It also can be used as a baseline study from which to go forward and guide the therapeutic plan. Treatment will be guided by the risk stratification of the patient.
- If the patient is unstable or there are clear signs of tension pneumothorax, needle decompression should be done. Do not wait for confirmation with a chest x-ray.

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Moh'd Terbi

Research Concepts:

Pneumothorax




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Question 830: A 17-year-old comes to you with an acute nondisplaced left 6th anterior rib fracture on x-ray. Blood pressure is 130/80, heart rate 80, respiratory rate 16, and the patient has an oxygen saturation of 99% on room air. What is the next step in management?

Choices:

1. Transfer to ED for further management
2. Refer for an outpatient CT scan
3. Discharge with pain control
4. Ask the patient to return to the urgent care clinic in 2 days for re-evaluation.

Moh'd Terbi

Answer: 3 - Discharge with pain control

Explanations:

- Individuals with simple rib fractures do not need a higher level of care and may be safely discharged.
- The patient's vital signs are normal, and given no other injuries or evidence of a pneumothorax seen on x-ray, the patient may be safely discharged.
- The location of the rib fracture matters. If the patient sustained a rib 1 or 2 fracture, this typically signifies a severe mechanism which would warrant further evaluation for more serious injuries.
- If this patient had vital sign abnormalities or pain not relieved by PO medications, it would be appropriate to refer to the emergency department for further management.

Mohd Terbi

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Research Concepts:

Rib Fracture




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Question 831: A 20-month-old girl is brought to the clinic by her worried mother for an assessment of her development and health. According to the mother, her child has a 20-25 word vocabulary and uses a 1-word phrase mostly. She was born at 39 weeks of gestation and is up to date with routine vaccinations. The child can run and kick a ball. Growth has been consistent along with the 50th percentile for height, weight, and circumference. The mother reveals that her elder son, who is five years old now, had a 50 plus word vocabulary and could speak in 2 word-phase vocabulary by the age of 20 months. During the conversation with her mom, the patient pretends to be playing with her doll and sits on the floor, scribbling with a colored pencil. She starts crying as soon as the physician holds the patient in his lap. Which of the following is the most appropriate next step in the management of this patient?

Choices:

Mohit Tehlan

1. Tell the mother that the patient has cognitive delay
2. Tell the mother that the patient has gross motor delay
3. Ask more questions from the mother to assess for language delay
4. Reassure the mother that her girl has a normal developmental milestones

Answer: 4 - Reassure the mother that her girl has a normal developmental milestones

Explanations:

- Normal development of a 20-month-old child includes a 10- to 25-word vocabulary, to run, scribbling, pretend play, and stranger anxiety. This patient does all these activities and has a normal achieved normal developmental milestones.
- To understand human growth and development, healthcare professionals need to understand and learn about two areas: (1) knowledge of milestone competencies, for example, growth in the motor, cognitive, speech-language, and social-emotional domains and (2) the eco-biological model of development, specifically, the interaction of environment and biology and their influence on the development.
- Between 18 and 30 months, individuation (autonomy) emerges. The confidence in the child-parent relationship and continued firm parenting helps the child face environmental challenges on his own more persistently and enthusiastically. The child's temperament manifests itself more, and he is aggressive and reserved or friendly and cooperating.
- Around 18 to 24 months, he learns to pretend-play, such as talking on a toy phone or feeding a doll and plays next to or in parallel with another child. He may imitate other child's play and look at him, but he cannot play in a cooperative, imaginative way with another child yet. During preschool years, he learns to manipulate his subjective emotions into a more socially accepted gesture. He uses a "poker face," exaggerate or minimizes emotions for social etiquette.

Mehri Tehrani

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Research Concepts:

Developmental Stages of Social Emotional Development In Children




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Moh'd Terbi

Question 832: A 4-day-old male infant is brought to the hospital with complaints of yellowish discoloration of the skin for two days. The patient was born normally without any known complications. His weight was 3.4 kg, and his length was 50 cm. On general physical examination, skin and sclera are yellowish, while the rest of the examination is unremarkable. Blood reports reveal total serum bilirubin levels of 19.4 mg/dl, conjugated bilirubin 2.3 mg/dl, hemoglobin 11 g/dl, a platelet count of 112 x 106/l, urea of 24 mg/dl, creatinine levels at 0.3 mg/dl, sodium 137 mmol/l, potassium 4.9 mmol/l, aspartate aminotransferase 57 U/l, alanine aminotransferase 24 U/l, gamma-glutamyl transferase 265 U/l, albumin levels 3.4 mg/dl and serum bilirubin to albumin ratio is 5.3. What treatment in this patient would be associated with the risk of developing bronze baby syndrome?

Choices:

Moh'd Terbi

1. Exchange transfusion
2. Intravenous immunoglobulins
3. Phototherapy
4. Enhanced nutrition

Answer: 3 - Phototherapy

Explanations:

- The patient has conjugated hyperbilirubinemia as his conjugated bilirubin levels are high. Conjugated hyperbilirubinemia is always pathologic and is due to defects in bile formation or transport, obstruction to its flow, or to systemic conditions that may affect the liver. Conditions causing conjugated hyperbilirubinemia due to hepatobiliary disease include biliary atresia, choledochal cysts, idiopathic neonatal hepatitis, and Alagille syndrome.
- Phototherapy is started based on risk factors and the serum bilirubin level on the nomogram.
- The use of phototherapy is not indicated in conjugated hyperbilirubinemia and may lead to the “bronze baby syndrome” with grayish-brown discoloration of the skin, serum, and urine. After phototherapy is discontinued, there is an increase in the total serum bilirubin level known as the" rebound bilirubin." The "rebound bilirubin" level is usually lower than the level at the initiation of phototherapy and does not require reinitiation of phototherapy.
- IV immunoglobulin is recommended to treat increasing bilirubin levels from iso-immune hemolysis despite phototherapy. IV immunoglobin is initiated when the bilirubin level is within 2 to 3 mg/dl of the exchange transfusion level.

Mona Tariq

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Research Concepts:

Neonatal Jaundice

StatPearls Knowledge Base

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Moh'd Terbi

Question 833: A 9-year-old boy with dyslexia is brought to the clinic for follow up. His parents are concerned about why he developed this condition. Which of the following best answers their concern?

Choices:

1. Vision impairments
2. Inadequate educational services
3. Parents
4. Diet

Moh'd Terbi

Answer: 3 - Parents

Explanations:

- There is significant evidence that points toward both causes, a genetic and neuroanatomic base for both learning disability and reading disability. Dyslexia results from individual differences in the parts of the brain that enable reading. It tends to run in families. Dyslexia appears to be linked to certain genes that affect how the brain processes reading and language.
- There is a familial association between twins which suggests that 50% of the difficulties in performance can be attributed by heritable factors, with also environmental influences that are greater in children who have lower intelligence quotient scores.
- There are comorbid associations with ADHD, autism and major depressive disorder, that could intervene in the presentation.
- Learning disorders are not associated with dietary deficiencies.

Wan'd Terbi

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Research Concepts:

Learning Disability




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Question 834: An intrauterine growth-restricted male infant is being evaluated after birth. He was born at 38 weeks of gestation. Perinatal history has been complicated by diabetes mellitus type 2. Infant APGAR scores were 8 and 8 at 1 and 5 minutes, respectively. He was initially stable to stay with his mother in the newborn nursery. However, he is noted to have significant tremors followed by tonic-clonic activity suspicious for seizures at 5 hours of life. His blood glucose level is low, so he is admitted to the NICU. Which of the following is most strongly associated with adverse neurodevelopmental outcomes in this patient?

Choices:

1. Any blood glucose level of 45 mg/dL
2. An episode of prolonged hypoglycemia
3. Maternal history of type 2 diabetes mellitus
4. Intrauterine growth status

Moh'd Terbi

Answer: 2 - An episode of prolonged hypoglycemia

Explanations:

- Neonatal hypoglycemia is a common condition in newborns with risk factors.
- Screening and timely management of neonatal hypoglycemia are essential to prevent adverse neurodevelopmental outcomes.
- Prolonged and severe hypoglycemia has been found to be associated with long-term disabilities and adverse neurodevelopmental outcomes.
- Growth restriction and being an infant of a diabetic mother are risk factors for neonatal hypoglycemia.

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Moh'd Terbi

Research Concepts:

Neonatal Hypoglycemia




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Question 835: A patient presents with a dislocated knee. On evaluation, the dorsalis pedis or posterior tibial artery pulses are not palpable. Disruption of which artery is most concerning?

Choices:

1. Dorsalis pedis artery
2. Femoral artery
3. Popliteal artery
4. Posterior tibial artery

Moh'd Terbi

Answer: 3 - Popliteal artery

Explanations:

- It is reported that between 4% and 20% of knee dislocations result in a rupture of the popliteal artery.
- Rupture of the popliteal artery is a surgical emergency.
- Distal pulses need to be palpated before and immediately after reduction of a dislocated knee.
- CT angiography is used to confirm a diagnosis.

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Research Concepts:

Mohd Terbi

Anatomy, Bony Pelvis and Lower Limb, Popliteal Artery




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Question 836: A 17-year-old man presents to the emergency department with blurred vision and difficulty swallowing for a day. His past medical or surgical history is insignificant. On examination, the patient has slurred speech. Moreover, multiple track marks are seen on both arms, with some surrounding erythema. Examination of the cranial nerves reveals ptosis in both eyes. Ophthalmic examination reveals bilateral diplopia and impaired pupil accommodation. Examination of the upper limbs reveals a lower than the normal tone of muscles, and power is 4/5 bilaterally. Examination of the lower limbs is unremarkable. Sensations are intact in both upper and lower limbs. What is the most likely organism causing this patient's presentation?

Choices:

1. Clostridium botulinum
2. Clostridium tetani
3. Clostridium butyricum
4. Campylobacter jejuni

Moh'd Terbi

Answer: 1 - Clostridium botulinum

Explanations:

- Botulism is a neuroparalytic syndrome that results from the systemic effects of an exo-neurotoxin produced by the gram-positive, rod-shaped, spore-forming, obligate anaerobic bacterium Clostridium botulinum. Other Clostridium species (Clostridium butyricum and Clostridium baratii) occasionally produce the toxin.
- Botulism classically begins with cranial nerve palsies ("bulbar symptoms") that progress to the symmetrical descending weakness of the trunk, extremities, and smooth muscle, with eventual flaccid paralysis. Patients usually have no sensory deficits except for blurred vision, although paresthesias are occasionally seen. Typical early symptoms include diplopia (visual disturbances), dysphagia (difficulty swallowing), dysphonia (voice change), and dysarthria (slurred speech), reflecting the high susceptibility of cranial nerve efferent presynaptic terminals to the activity of BoNT.
- Involvement of the diaphragm precipitates respiratory failure, often requiring intubation and mechanical ventilation. Palsies of autonomic smooth muscle cause constipation and urinary retention.
- Food-borne botulism will often present with a prodrome of abdominal pain, nausea, and vomiting beginning 12 to 72 hours after ingestion of the preformed toxin.

Mona Terhi

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Research Concepts:

Botulism

StatPearls Knowledge Base

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Moh'd Terbi

Question 837: A 15-year-old female came for evaluation of headaches over the past few months. The headaches have been progressively worsening. She also complains of vision changes. She had not had any periods. On evaluation, she had a childish look and appeared short for her age. On examination for secondary sexual characteristics, the breast development was Tanner stage 1, and the pubic and axillary hair were absent. What is the next best step to aid in the diagnosis?

Choices:

1. Gonadotropins (FSH/LH)
2. Basic metabolic panel
3. CT head
4. Estradiol

Moh'd Terbi

Answer: 3 - CT head

Explanations:

- The highest incidence of craniopharyngioma is in the pediatric population, ages 5 to 14. This is commonly described as the "pediatric spike" of craniopharyngioma's bimodal distribution of incidence.
- 85 % of children with craniopharyngioma will have gonadotropin deficiency leading to delayed puberty. Delayed puberty is the lack of sexual development at a certain time, which is the absence of breast development by age 12 years in girls.
- CT head is the next best test for diagnosis as the patient has headaches, vision change, and symptoms of one or more hormonal deficiencies.
- Gonadotropin deficiency is diagnosed by observation of documenting a lack of pubertal growth in adolescents. Checking gonadotropins and estradiol may not aid in diagnosis.

Mona Terbi

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Research Concepts:

Pediatric Craniopharyngioma




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Question 838: A 6-month-old girl was brought to the clinic because of jaundice and palpable abdominal mass in the right upper quadrant. Total bilirubin level was 7 mg/dL, and indirect bilirubin level was 1.4 mg/dL. Abdominal ultrasound revealed a cystic dilation at the porta hepatis. The diagnosis was confirmed by MRCP. A feared complication of her condition is carcinogenesis. Which of the following is the best treatment to lower that risk?

Choices:

1. External drainage of the cyst
2. Complete excision of the cyst
3. Liver lobe resection
4. Oophorectomy

Moh'd Terbi

Answer: 2 - Complete excision of the cyst

Explanations:

- A choledochal cyst (CC) is a rare medical anomaly affecting the biliary tree. It involves the dilation of the biliary tree that could affect the extrahepatic and/or the intrahepatic segments.
- A meta-analysis that combined 18 studies determined that the prevalence of cancer in patients with choledochal cysts was 11%. The prognosis of those who develop a malignancy is poor, with a 5-year survival rate of around 5%.
- The risk of developing a malignancy in cases who only underwent surgical drainage of the cyst without excision was four times higher than those who have undergone surgical excision of the cyst.
- The risk of biliary malignancy continues to be high even after 15 years of cyst excision. Consequently, long term follow-up with biochemical evaluation and abdominal ultrasound is necessary.

Mona Terbi

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Research Concepts:

Choledochal Cyst




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Question 839: A 1-day-old full-term neonate born via spontaneous vaginal delivery is noted to have a blue-gray patch on the skin over the sacrum. What is the most appropriate parent counseling?

Choices:

1. A skin biopsy will be needed to evaluate the lesion.
2. The lesion will disappear within the first few years on its own.
3. Laser therapy should be considered in the next three weeks.
4. The lesion is benign and will remain for the rest of the patient's life.

Moh'd Terbi

Answer: 2 - The lesion will disappear within the first few years on its own.

Explanations:

- Congenital dermal melanocytosis commonly appears as a single or multiple hyperpigmented macular lesion(s) on the lower lumbar, sacral, or gluteal skin.
- These lesions can appear at birth or shortly after birth. A majority of patients have less than 5% total body surface area involvement.
- In most patients, the lesions disappear by one year of age, rarely persisting after six years of age.
- However, extra-sacral lesions may be treated for cosmetic purposes.

Mohd Terbi

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Research Concepts:

Dermal Melanocytosis




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Question 840: A 5-year-old male is brought to the clinic complaining of a rash in the periumbilical region of his abdomen. The rash is itchy and started when he bought a new belt. There is no history of food allergy, recent infection, or new medications. His vital signs are stable. The mechanism that is responsible for this presentation is also responsible for which of the following conditions?

Choices:

1. Emphysema
2. Arthus reaction
3. Sarcoidosis
4. Post-streptococcal glomerulonephritis

Moh'd Terbi

Answer: 3 - Sarcoidosis

Explanations:

- Contact dermatitis can occur with some types of belt buckles that contain nickel.
- Contact dermatitis is considered a type four hypersensitivity reaction.
- Sarcoidosis is also considered a type four hypersensitivity reaction.
- The treatment of contact dermatitis is by avoiding the possible allergen, and by using topical emollients.

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Moh'd Tersi

Research Concepts:

Type IV Hypersensitivity Reaction




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Question 841: A 5-month-old boy is brought to the clinic for a well-child visit. The family recently moved to the city 15 days ago. The mother mentions that this is the first visit to this clinic. As per the record, the infant has received all the immunization appropriate for his age. Which of the following is the most appropriate schedule of the varicella vaccine for this infant?

Choices:

1. At six months and twelve months
2. At twelve months and 4 to 6 years
3. At six months and 4 to 6 years
4. At twelve months and two years

Moh'd Terbi

Answer: 2 - At twelve months and 4 to 6 years

Explanations:

- Varicella vaccine is administered in two doses at 12 to 15 months and 4 to 6 years.
- Twelve months is the minimum age for the first dose of varicella vaccine.
- The second dose may be administered as early as three months after the 1st dose.
- Unimmunized children less than 12 years need two doses with three months interval. For individuals above 13 years, a four weeks interval is enough.

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Moh'd Terbi

Research Concepts:

Understanding and Application of CDC Immunization Guidelines




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Question 842: An 8-day-old infant presents with sudden onset vomiting. On questioning the parents, it transpires that the infant has also been experiencing seizures and is quite lethargic. A clinical examination is significant for generalized hypertonia and an absent Moro reflex. Amino acid plasma analysis reveals the elevation of valine, leucine, allo-isoleucine, and isoleucine. The infant is placed on a diet restricting these amino acids. Which one of the following best describes the location of the enzyme responsible for the catabolism of these amino acids?

Choices:

1. Cytoplasm
2. Rough endoplasmic reticulum
3. Mitochondria
4. Hepatic stellate cells

Moh'd Terbi

Answer: 3 - Mitochondria

Explanations:

- Classic maple-syrup urine disease (MSUD) occurs due to reduced branched-chain ketoacid dehydrogenase (BCKAD) activity of 0% to 2% of normal. BCKAD is located within the inner mitochondrial membrane of various tissues such as skeletal muscle, liver, kidney, and the brain.
- The branched-chain amino acids (BCAA) are essential amino acids with hydrophobic side chains and are found in protein-rich food. Their catabolism is necessary to maintain various physiologic functions such as protein synthesis, gluconeogenesis, fatty acid synthesis, cholesterol synthesis, and cellular signaling. In the brain, BCKAD helps metabolize BCAA to facilitate cerebral GABA and glutamate synthesis. The liver and kidney are responsible for the catabolism of 10% to 15% of BCAA. However, unlike most amino acids, the majority of BCAA transamination and oxidation takes place in the skeletal muscle.
- Classic MSUD is a clinical constellation of vomiting, lethargy, seizures, abnormal neurological findings and elevated valine, leucine, allo-isoleucine, and isoleucine.
- If left untreated, neonates develop irritability, poor feeding, lethargy, opisthotonus, dystonias, central respiratory failure, coma, maple syrup odor of cerumen, neurological complications, and stereotypical movements such as fencing and bicycling.

Mehdi Terki

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Research Concepts:

Maple Syrup Urine Disease

StatPearls Knowledge Base

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Moh'd Terbi

Question 843: A 4100-gram (99th percentile) newborn male is delivered at 39 weeks gestation to a 32-year-old gravida 3 para 3 female. The patient was born via normal vaginal delivery, but the second stage of labor was protracted. The baby is examined several hours after delivery, and there is a swollen deformity of the baby's scalp. The patient is hemodynamically stable and well-appearing. Scalp examination revealed a soft palpable swelling over the right temporoparietal area, has slight discoloration and did not extend past the suture lines. The patient's physical examination is otherwise unremarkable. His head circumference was noted to be 36 cm (90th percentile), and this finding remained stable throughout the patient's hospital course. At four weeks of age, the patient presented to the emergency department with decreased feeding and a fever of 38.9 C (102 F). The only clinical symptom apart from the fever was redness and tenderness over the swelling noted during the patient's nursery stay. Laboratory tests revealed leukocytosis, hemoglobin level of 8.8 g/L, normal platelet count, and a C-reactive protein level above 25 mg/L. Contrast enhancement was seen within the scalp lesion following the CT brain scan. Before initiating broad-spectrum antimicrobial therapy, which of the following best describes the next step in the management of the child?

Mich'l Terly

Choices:

1. Provide reassurance
2. Perform a needle aspiration and culture
3. Admit patient and provide 10 days of antimicrobial treatment
4. Order serial hematocrit checks

Answer: 2 - Perform a needle aspiration and culture

Explanations:

- Whenever an infant develops a decline in general well-being or fever, bacterial sepsis should be suspected.
- This patient has cephalohematoma. Usually, it is a benign condition that resolves spontaneously, but rarely certain complications may occur. Due to the delivery circumstances and the clinical features noted on this patient's presentation, infection of the cephalohematoma should be considered.
- In addition to further imaging (to characterize the deformity as an abscess and rule out underlying osteomyelitis) as well as broad-spectrum antimicrobial therapy, in order to definitely determine an infected cephalohematoma as the source of infection, the next best step in management is to refer the patient to pediatric surgery to perform a needle aspiration and culture.
- Due to the potential for sepsis, reassurance is not appropriate. Admitting the patient to the wards is appropriate, but the clinician should definitively diagnose the condition via needle aspiration and identify the bacterial organism before providing a prolonged course of antimicrobials. Serial hematocrits are necessary if there is a concern for ongoing hemorrhage, but the patient's brain imaging did not indicate this.

Mohit Tekh

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Research Concepts:

Cephalohematoma



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Moh'd Terbi

Question 844: A 2-year-old boy presents with difficulty walking and climbing stairs. On examination, his calves appear enlarged bilaterally. Laboratory analysis reveals a creatine kinase of 700 U/L (less than 250). A muscle biopsy shows scattered degeneration and regeneration of myofibers, and the replacement of muscle tissue with fibrous connective tissue and fat. Genetic analysis reveals the absence of a gene on the X chromosome. The protein coded by the deleted gene is responsible for which of the following?

Choices:

1. Binding myosin head
2. Connecting the muscle fiber cytoskeleton to the extracellular matrix
3. Binding calcium released from the sarcoplasmic reticulum
4. Binding acetylcholine released from the motor neuron

Moh'd Terbi

Answer: 2 - Connecting the muscle fiber cytoskeleton to the extracellular matrix

Explanations:

- Duchenne muscular dystrophy (DMD) is one of the most severe forms of inherited muscular dystrophies.
- DMD is caused by a mutation of the dystrophin gene, located on chromosome Xp21.
- Dystrophin is a critical part of the dystrophin-glycoprotein complex (DGC), which plays an important role as being a structural unit of muscle.
- Patients with symptoms of weakness and a possible family history of dystrophinopathies should be worked up for DMD screening with a genetics panel.

Mahdi Terbi

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Research Concepts:

Duchenne Muscular Dystrophy




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Question 845: A 36-year-old nulliparous woman with preeclampsia presents to a prenatal clinic at 36 weeks of gestation. Umbilical artery Doppler ultrasound reveals an absent diastolic flow, and a decision is made to deliver the pregnancy immediately. A male neonate is born with weight, length, and head circumference below the 6th percentile for gestational age. Physical examination is otherwise unremarkable. Compared with other infants of similar gestational age, which of the following best describes this infant's prognosis?

Choices:

1. Compared with infants with asymmetric growth restriction, he is more likely to experience catch-up growth by the second year of life.
2. His risk of developing chronic kidney disease is similar to that of the general population.
3. His risk of developing coronary artery disease is similar to that of the general population.
4. He is at increased risk for gross motor and fine motor delays.

Med'd Terbi

Answer: 4 - He is at increased risk for gross motor and fine motor delays.

Explanations:

- Infants with fetal growth restriction (FGR) or are small for gestational age (SGA) are at increased risk for developmental delays, including fine and gross motor delays.
- Compared with infants whose size is appropriate for gestational age (AGA), infants with FGR or SGA are also more likely to have behavioral problems, decreased cognitive performance, and school difficulties.
- This infant has symmetric growth restriction, with height, weight, and head circumference similarly affected. Infants with symmetric growth restriction are less likely to achieve catch-up growth by the second year of life than those with asymmetric growth restriction.
- Infants with FGR or SGA are at increased risk for several chronic diseases in adulthood, including hypertension, coronary artery disease, diabetes mellitus, chronic kidney disease, and obesity.

Mohit Tariq

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Research Concepts:

Small for Gestational Age




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Question 846: A child presents for a well-baby check. She was born to a 35-year-old G3P2 female via spontaneous vaginal delivery at 38 weeks gestation. At this visit, she is 12 months old and is assessed to have reached the milestones appropriate for this age. Which of the following milestones should the baby have reached by her next visit at 18 months of age?

Choices:

1. Climbs stairs with one foot per step
2. Draws some letters and numbers
3. Hops on one foot
4. Scribbles with a writing tool

Moh'd Terbi

Answer: 4 - Scribbles with a writing tool

Explanations:

- An 18-month-old child should be able to scribble with a writing tool.
- The Developmental milestones are a set of goals or markers that a child is set to achieve from infancy to childhood. They are categorized into five domains: gross motor, fine motor, language, cognitive, and social-emotional, and behavioral.
- Developmental delays can be specific (present in one area), or global (present in more than two areas). Children can present initially with developmental delay in a specific area, and this could affect the skills in other areas, thus progressing to global delay.
- A child should be able to climb stairs with one foot per stair by age 3. A child should be able to draw some letters and numbers by the age of 5. A child should be able to hop on one foot by the age of 4.

Mohit Terbi

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Research Concepts:

Development Milestones




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Question 847: A 17-year-old male patient presents with complaints of tenderness and swelling to bilateral areas of his jaw. His parents report that he has been feeling unwell for the past four days because of high-grade fever, myalgias, and headaches. His parents also reveal that he has not received any vaccinations since birth, as they do not believe they are protective. On physical examination, tenderness is endorsed on palpation of the parotid glands bilaterally. Which of the following best describes the mechanism of action of one of the enzymes that will likely be elevated in this patient?

Choices:

1. Hydrolysis of peptide bonds
2. Cleavage of RNA strands
3. Hydrolysis of starch into monosaccharides
4. Hydrolysis of lipids into triglyceride and fatty acid

Mich'd Terbi

Answer: 3 - Hydrolysis of starch into monosaccharides

Explanations:

- Mumps classically presents with pain, tenderness, and swelling to unilateral or bilateral salivary glands in a patient who has not received the measles-mumps-rubella (MMR) vaccine.
- Mumps is associated with elevated levels of serum amylase.
- Serum amylase is primarily produced by the salivary glands and cleaves starch/carbohydrate groups into smaller monosaccharides via hydrolysis of internal alpha-1,4-glycoside bonds.
- Mumps is a viral illness caused by a paramyxovirus.

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Moh'd Terbi

Research Concepts:

Hyperamylasemia




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Question 848: A 5-year-old boy who recently moved from Honduras is brought to the clinic by his mother. The patient has been referred for a global developmental delay. During the visit, an ataxic gate and severe speech delay are noticed. The mother reports the patient has been on antiseizure medication since age two years with good control. She does, however, describe odd behavior characterized by an outburst of laughing episodes, sometimes with subsequent loss of conciseness. Which of the following is the best initial test for this patient?

Choices:

1. DNA sequencing
2. Methylation studies and chromosomal microarray
3. Karyotype
4. Newborn screening

Moh'd Terbi

Answer: 2 - Methylation studies and chromosomal microarray

Explanations:

- Methylation test and chromosomal microarray should be the best first test to diagnose a patient with Angelman syndrome (AS).
- AS is typically caused by a de novo mutation, rather than inheritance, on the maternal gene UBE3A.
- If methylation studies are positive, consider deletion, uniparental disomy, imprinting defect. If methylation studies are negative, but the patient has Angelman syndrome-like phenotype, consider UBE3A mutation or Angelman syndrome-like conditions.
- DNA sequencing will be able to assess the abnormal gene in a patient with Angelman syndrome. It is not considered the best first choice. Karyotype will be normal for this patient if no concomitant chromosomal abnormalities are present. Angelman syndrome is described as a genetic disorder with no chromosomal abnormalities. Angelman syndrome is not routinely tested in newborn screening.

Mohsen Terbi

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Research Concepts:

Angelman Syndrome




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Question 849: A 4-year-old boy presents to the office with his parents with a skin infection. This is the fourth episode of pyogenic skin infection in one year. His parents also state that he has bleeding from gums on a few occasions. They deny any abnormal body movements, fever, trauma, weight loss, night sweats, or lumps/bumps in the body of the child. On examination, the vitals are stable. The hair of the child is silver in color, and the eyes are pale. Right leg examination shows folliculitis. CBC with differential reveals pancytopenia. Bone marrow smear shows giant lysosomes. What type of inheritance pattern is followed by the disease that this child has?

Choices:

1. Autosomal dominant
2. Autosomal recessive
3. X linked dominant
4. X linked recessive

Moh'd Terbi

Answer: 2 - Autosomal recessive

Explanations:

- Chediak Higashi syndrome is an autosomal recessive disorder with abnormal intracellular protein transport.
- There is an impaired synthesis and/or maintenance of storage and secretory granules.
- Patients have hypopigmentation, prolonged bleeding time, recurrent infections, and peripheral neuropathy.
- It is often fatal in childhood due to infection or an accelerated lymphoma-like phase.

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Moh'd Terbi

Research Concepts:

Chediak Higashi Syndrome




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Question 850: A 4-year-old who regularly attends daycare presents with high fevers, abdominal pain, vomiting, and bloody diarrhea. He also had a witnessed seizure. Which of the following is true?

Choices:

1. The patient will need treatment for Salmonella infection
2. The patient will need treatment for viral gastroenteritis
3. The patient will need treatment for Shigella infection
4. The patient will need long-term anticonvulsants

Moh'd Terbi

Answer: 3 - The patient will need treatment for Shigella infection

Explanations:

- Seizures can be an early manifestation of Shigella infection.
- Other central nervous system symptoms include lethargy, severe headache, and meningismus.
- Children in daycare centers who are less than 5 years of age are at high-risk for shigellosis.
- Treatment for this child includes parenteral or oral hydration, antipyretics, and anticonvulsants. The patient will not need long-term anticonvulsants.

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Moh'd Terbi

Research Concepts:

Shigella




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Question 851: A 17-year-old female presents for a three-day history of malodorous, watery vaginal discharge that is more noticeable after sexual intercourse. She has been sexually active with her boyfriend for the last six weeks and denies having a previous sexual partner. Her last menstrual period was two weeks ago, and the couple uses condoms regularly. Exam reveals thin, white, and homogeneous vaginal discharge with a pH of 4.7. Wet mount microscopic examination shows clue cells. What is the most appropriate treatment for this patient's condition?

Choices:

1. Oral fluconazole as a single dose
2. Oral azithromycin as a single dose
3. Oral metronidazole for 5-7 days
4. Oral amoxicillin for 5-7 days

Moh'd Terbi

Answer: 3 - Oral metronidazole for 5-7 days

Explanations:

- This patient has bacterial vaginosis (BV), based on Amsel criteria. Three out of four criteria are needed: (1) thin, white, and homogeneous vaginal discharge (2) clue cells on microscopy of wet mount (3) pH of vaginal fluid more than 4.5 (4) release of a fishy odor on adding alkali (10% KOH), also known as a positive whiff test.
- Treatment regimens include oral metronidazole (500 mg twice daily for 5–7 days, or 2 g single dose); metronidazole 0.75% intravaginal gel once daily for five days; or clindamycin 2% intravaginal cream for seven days.
- Oral tinidazole twice-daily or single dose also can be used to treat BV.
- Although it is not considered a sexually transmitted infection, it is more common in sexually active women with a new partner or multiple partners.

Mehdi Terbi

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Research Concepts:

Bacterial Vaginosis




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Question 852: A 17-year-old female presents with concerns about her weight. Her body mass index is 30 kg/m². Menarche was at age 13 and her menses are irregular. She has moderate acne vulgaris and facial hair. Select the most likely diagnosis.

Choices:

1. Androgen insensitivity syndrome
2. Hypothyroidism
3. Polycystic ovarian syndrome
4. Hyperprolactinemia

Moh'd Terbi

Answer: 3 - Polycystic ovarian syndrome

Explanations:

- The National Institute of Health requires clinical or biochemical hyperandrogenism and oligo or anovulation for the diagnosis of polycystic ovarian syndrome (PCOS).
- Disorders that mimic the clinical features of PCOS should be excluded. These include thyroid disease, hyperprolactinemia, and nonclassic congenital adrenal hyperplasia (CAH) with 21-hydroxylase deficiency. Nonclassical CAH requires the measurement of serum 17-hydroxyprogesterone (17-OHP) for diagnosis. Patients may require further testing with an adrenocorticotropin stimulation test.
- The diagnosis of PCOS in adolescents is particularly challenging given the significant age and developmental issues in this group. Many features of PCOS, including acne, menstrual irregularities, and hyperinsulinemia, are common in normal puberty. Menstrual irregularities with anovulatory cycles and varied cycle lengths are common due to the immaturity of the hypothalamic-pituitary-ovarian axis in the 2- to 3-year time period post-menarche. Persistent oligomenorrhea 2 to 3 years beyond menarche predicts ongoing menstrual irregularities and a greater likelihood of underlying ovarian or adrenal dysfunction. In adolescent females, large, multicystic ovaries are a common finding, so ultrasound is not a first-line investigation in women in this age group.
- Despite its high prevalence, PCOS is underdiagnosed and frequently takes more than one visit or different physicians before it is identified. These visits usually occur over more than a year. It can be a frustrating process for the patient. Delayed diagnosis can lead to the progression of comorbidities, making it more difficult to implement the lifestyle interventions that are critical for the improvement of features of PCOS and better quality of life.

Monica Terbi

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Research Concepts:

Polycystic Ovarian Disease

StatPearls Knowledge Base

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Moh'd Terbi

Question 853: A 3-week-old female patient is brought in with the complaint of diarrhea for five days. Her mother has been feeding her breast milk and formula milk. On examination, the baby is sleeping peacefully and is afebrile. The mother states that the baby becomes very fussy after drinking milk. The patient has not lost any weight. What is the most likely cause of diarrhea in this newborn?

Choices:

1. Inflammatory bowel disease
2. Celiac disease
3. Tropical sprue
4. Protein intolerance

Moh'd Terbi

Answer: 4 - Protein intolerance

Explanations:

- The most common cause of diarrhea in infants is protein intolerance.
- The newborn's immune system gets sensitized to proteins present in the milk permeated through their immature gut and causes allergies.
- The most common symptom of milk protein intolerance is diarrhea, vomiting, and fussiness after drinking milk. Skin rashes may also be evident when IgE is involved.
- Inflammatory bowel disease (IBD) includes Crohn disease and ulcerative colitis, which may present with common gastrointestinal symptoms like diarrhea, rectal bleeding, and abdominal pain. However, it is important to rule out IBD as they are systemic chronic diseases and require extensive management.

Mon'd Terbi

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Research Concepts:

Protein Intolerance




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Question 854: A 12-year-old girl is brought to a clinic by her mother, with the complaints of fever and throat pain. A week back, she came for acutely inflamed tonsils, but despite taking antibiotics, there has been an insignificant improvement. The patient herself is not speaking because of severe pain. On local examination, there is a foul smell of the oral cavity, and the right tonsil is enlarged, bulging anteriorly and covered with mucus. She has her neck titled towards the right side as well. On palpation, her neck lymph nodes appear swollen, and there is a prominent right pharyngeal bulge. Her temperature is 101 F. She is admitted, and her laboratory investigations are sent. What is the next best step in the management of this patient?

Choices:

1. Oral amoxicillin + clavulanic acid
2. Intravenous fluids + dexamethasone
3. Intravenous fluids + ampicillin + metronidazole
4. Intravenous fluids + ampicillin + metronidazole + drainage

Wahid Terbi

Answer: 4 - Intravenous fluids + ampicillin + metronidazole + drainage

Explanations:

- Peritonsillar abscess, or quinsy, is pus collection in the peritonsillar space, behind the tonsillar capsule. It usually occurs after acute tonsillitis and sometimes due to smoking or chronic infection of the gums, but can occur de novo as well. It presents with unilateral throat pain, with a progressive increase in severity, and may be associated with earache and trismus. Painful swallowing causes poor oral hygiene and resultant halitosis. As the disease progresses, it can cause muffled or 'hot potato' voice. Some other features include fever, malaise, nausea, and generalized weakness.
- Local examination shows that the tonsil is pushed medially downwards, blanches on slight pressure, and may be covered with mucus. The edematous uvula is pushed to the opposite side. Jugulodigastric lymphadenopathy and torticollis are some additional features that may be seen.
- Diagnosis is usually clinical with tests like complete blood count, X-ray, and contrast-enhanced CT to support the diagnosis and confirm any other complications. Heterophil antibody test and pus culture sensitivity are carried out to find out the causative agent and start treatment accordingly, which is done in the hospital with intravenous fluids and antibiotics.
- The abscess needs to be treated medically and surgically. Medical management consists of hospitalization. Intravenous fluids are given for dehydration, and a suitable intravenous antibiotic with a broad spectrum, such as ampicillin/amoxicillin combined with metronidazole/clindamycin, is started. A culture sensitivity report before starting treatment is ideal. When the patient can tolerate, he is shifted to oral antibiotics. Analgesics and antipyretics are also given. For abscess, aspiration is

Medi-o-Tech

necessary. In some cases, incision and drainage may be required.

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Research Concepts:

Peritonsillar Abscess




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Moh'd Terbi

Question 855: An otherwise healthy 17-year-old presents to the emergency department with acute onset of chest pain. The chest pain is associated with deep inspiration. The patient denies any trauma, vigorous exercise, or any respiratory conditions. Vital signs include blood pressure 135/80 mmHg, pulse 86/minute, respiratory rate 19/minute, and temperature 37.3 C (99.1 F). An electrocardiogram (ECG) is also normal. The physical exam reveals decreased air intake and hyper resonance on the right side. A chest x-ray shows an increased lucency with no vascular markings on the right side with mild tracheal deviation. What is the most common predisposing factor of this condition?

Choices:

1. Pulmonary bullae
2. Bronchogenic cysts
3. Pulmonary cysts
4. Pulmonary hamartoma

Moh'd Terbi

Answer: 1 - Pulmonary bullae

Explanations:

- Spontaneous pneumothorax occurs without any precipitating events and is divided into two groups.
- Primary spontaneous pneumothorax occurs in healthy, non-diseased lungs. Secondary spontaneous pneumothorax develops from a lung that is diseased with changes in the parenchymal structures.
- In 76% to 100% of cases of primary spontaneous pneumothorax, bullae are the primary culprit. This is usually from smoking. Bullae formation follows a particular pathway. Destruction of the elastic fibers in the lung is induced by macrophages and neutrophils, which are activated by exposure to smoke inhalation.
- Secondary spontaneous pneumothorax has many causes, including chronic obstructive pulmonary disease, asthma, and tuberculosis.

Monica Terbi

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Research Concepts:

Air Leak




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Question 856: A 17-year-old girl with no reported past psychiatric history presents to the clinic with her father. The patient was recently involved in a school shooting 3 months ago. She was able to get away without any physical injuries; however, since the event, she has had recurrent nightmares. She is unable to concentrate in class, as she continuously looks out the window, looking out for potential shooters. The patient is still unable to speak of the incident freely, but she is going to therapy. Since the event, she has been much more reserved and detached from her friends and family. In the Diagnostic and Statistical Manual of Mental Disorders, 5th Edition (DSM-5), a new age range has been included as a new diagnostic category for this disorder. What is this age range?

Choices:

1. Children less than 6 years old
2. Children less than 2 years old
3. Children less than 12 months old
4. Children more than 12 years old

Michael Terbi

Answer: 1 - Children less than 6 years old

Explanations:

- The disorder described here is post-traumatic stress disorder (PTSD).
- The Diagnostic and Statistical Manual of Mental Disorders, 5th Edition (DSM-5), now has a diagnostic category for PTSD in children less than 6 years old.
- The phenomenology of PTSD can significantly vary as compared to the presentation in adults.
- Current estimates suggest that 10% of children less than 18 years old have PTSD.

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Moh'd Terbi

Research Concepts:

Posttraumatic Stress Disorder In Children




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Question 857: A mother brought in an infant female who was born at 34 weeks gestation for her routine 6-month immunizations. The provider performs a routine history and physical exam while the mother just finishes breastfeeding the child. Which of the following would be expected in this infant?

Choices:

1. Expressing stranger anxiety and sitting unsupported
2. Crawling, waving, and pincher grasp
3. Sitting only when supported, smiling, and rolling from stomach to back
4. Turning head toward the sound, sitting unsupported, and transferring an object from one hand to the other

Moh'd Terbi

Answer: 3 - Sitting only when supported, smiling, and rolling from stomach to back

Explanations:

- Typical child development is adjusted for infants that are born prematurely at less than 37 weeks gestation for the first two years of life.
- For instance, an infant born at 32 weeks would still be considered as having normal development at age 4 months if they were meeting 2-month milestones. Four months - correction of 8 weeks = 2-month developmental stage.
- For this question, one would expect a child born at 34 weeks to be about one month behind the typical development for a 6-month-old. Laughing and rolling from stomach to back would be appropriate for this child.
- Sitting without support, stranger anxiety, transferring objects, and crawling would not be found at this stage.

Mona Terbi

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Research Concepts:

Development Milestones




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Question 858: A 17-year-old white male patient with a history of psoriasis vulgaris wants to get a multicolored tattoo over his forearm. He is aware of psoriasis associated Koebner phenomenon (KP) and seeks medical advice regarding whether he should go ahead with getting the tattoo needled or not. The clinician shows uncertainty about the tattoo and tells the patient that the associated Koebner phenomenon in psoriasis does not render tattooing a contraindication in psoriatic patients. However, the clinician recommended him to be more vigilant and report any sign of psoriatic lesions koebnerization over the tattoo site. In which of the following situations, does this vigilance and reporting recommendation assumes the highest level of significance in this patient?

Choices:

1. Early-onset of psoriasis in the patient (before 25 years of age), with active disease and patient on a high dose of immunosuppressants
2. Early-onset of psoriasis in the patient (before 25 years of age), with waxing and waning disease course and patient not on any systemic immunosuppressant
3. Patient developing guttate lesions over and above chronic plaques of psoriasis
4. When the patient has known psoriatic arthritis

Mona Terbi

Answer: 1 - Early-onset of psoriasis in the patient (before 25 years of age), with active disease and patient on a high dose of immunosuppressants

Explanations:

- Tattooing induces epidermal damage elaborating putative mediators of Koebner phenomenon (KP). It has been shown that tattoo induced KP with the appearance of psoriatic lesions at the tattoo site is more often encountered in patients with 'early-onset' of psoriasis, and active disease. Treatment with immunosuppressants, including biologics, does provide broad-spectrum protection to the genesis of psoriatic diathesis; however, immunosuppressants are also well-known to delay the healing of the tattoo wound. The latter may be responsible for the delayed appearance of KP after healing of the wound.
- A patient with a waxing and waning course of the disease is less likely to develop KP compared to one with active disease. It should also be noted that an increased likelihood of tattoo-associated KP has been observed in patients who had a history of KP in the past.
- The subtype of psoriasis does not influence the occurrence of KP over a tattoo. Chronic plaque, scalp, palmoplantar, guttate, and other variants did not show differential rates of tattoo-associated KP according to the studies. The patients who develop psoriatic lesions over the tattoo within 7-10 days typically have a history of KP compared to those with delayed appearance of lesions, who are typically KP negative. However, it must be noted that during their lives, patients may also transfer from a state of Koebner positivity to negativity and vice versa.
- Psoriatic arthritis flare-up has not been reported after tattooing in any study. Thus, psoriatic arthritis does not seem to be an issue for this consideration.

Michael Terry

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Research Concepts:

Koebner Phenomenon

StatPearls Knowledge Base

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Moh'd Terbi

Question 859: An 11-month-old male child is found to have multiple bilateral large tortuous lesions which appear to originate from the lumbar neural foramina and paravertebral region. The child is also noted to have light brown patches on the torso and freckles in the armpits. Which of the following is most likely to be found on further evaluation in this patient?

Choices:

1. Optic gliomas
2. Hemihyperplasia
3. Testicular atrophy
4. Brainstem glioma

Moh'd Terbi

Answer: 1 - Optic gliomas

Explanations:

- Optic gliomas are associated with neurofibromatosis type 1 (NF1).
- Light brown patches of skin associated with neurofibromatosis are called café-au-lait spots.
- Large plexiform neurofibromas are essentially pathognomonic for neurofibromatosis type 1.
- In addition to café-au-lait spots and plexiform neurofibromas, findings in neurofibromatosis type 1 may include freckles in the groin or armpits, optic gliomas/low-grade gliomas, Lisch nodules, skeletal dysplasias, and first degree relatives with NF1.

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Moh'd Terbi

Research Concepts:

Neurofibroma




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Question 860: A 6-year-old boy is brought to the clinic by his mother, who is concerned because the son is obese compared to his friends. The mother states that the patient is mostly sedentary and likes to eat fast food like hamburgers and pizza. The patient rarely drinks water and prefers to drink soda. Which of the following is the most appropriate recommendation for this patient?

Choices:

1. Reduce calories substantially compared to his level of physical activity
2. Increase the consumption of juices to supplement nutrients normally obtained from vegetables and fruits
3. Reduce the consumption of oily fish like salmon to reduce fat consumption
4. Encourage moderate to vigorous physical activity every day and reduce calories moderately

Moh'd Terbi

Answer: 4 - Encourage moderate to vigorous physical activity every day and reduce calories moderately

Explanations:

- The American Heart Association (AHA) for children aged 2 and older to balance physical activity with dietary calories.
- Decreased activity level among children and adolescents is significantly associated with obesity.
- In 2007, only 36% of US children and adolescents met the recommended levels of physical activity.
- The American Heart Association recommends 60 minutes of moderate to vigorous physical activity every day. Dietary modifications are needed to include increased intake of fruits, vegetables, and grains, limiting fats and simple sugars.

Mahdi Terbi

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Research Concepts:

Pediatric Obesity Nutritional Guidelines




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Question 861: A 16-year-old Hispanic woman presents complaining of generalized weakness for three days. She denies fever, vomiting, diarrhea, or shortness of breath. She was taking metformin 500 mg twice a day for several years and had canagliflozin added to her medication regimen three weeks ago. Insulin was discontinued two weeks before presentation when it was felt no longer needed for glycemic control. Serum glucose is 165 mg/dL, serum bicarbonate 14 mmol/L, and an anion gap of 18 mmol/L. Ketones were present in the urine. What is the most likely diagnosis for the patient?

Choices:

1. Ethelene glycol ingestion
2. Euglycemic diabetic ketoacidosis
3. Lactic acidosis
4. Salicylate induced acidosis

Moh'd Terbi

Answer: 2 - Euglycemic diabetic ketoacidosis

Explanations:

- The euglycemia is an initial distractor, but the patient's story of medication changes and tightening glycemic control requiring the discontinuation of insulin indicates ketosis or starvation mode, and the most likely diagnosis would be eDKA.
- This patient is within the common 2-month window of initiation of sodium-glucose cotransporter-2 inhibitors (SGLT2 inhibitors) in a patient with type 2 diabetes mellitus.
- The patient has been taking metformin for an extended period. The newer agent of SGLT2 inhibitors is a more likely candidate for eDKA development than is the metformin for lactic acidosis at this point in the patient's treatment.
- There is no salicylate ingestion in the patient's history; however, there is an extensive diabetic history with recent medication changes to raise concern for eDKA as the source of the acidosis.

Monica Terbi

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Research Concepts:

Euglycemic Diabetic Ketoacidosis




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Question 862: A 10-year-old boy visited the outpatient clinic with his mom for evaluation for frequent bouts of fever and cough, often productive of white phlegm, since the age of 2. He reports dyspnea, which worsens significantly during exercise over the previous five years. He was diagnosed with asthma by a clinician in the past and was treated with bronchodilators with little relief of his symptoms. He was born at term but suffered severe pneumonia at three days of age, requiring admission to the neonatal intensive care unit. Foreign body inhalation is excluded, and he has no dysphagia. There is no family history of asthma. On assessment, he weighs 19.7 kg with a height of 130 cm. Vital signs are within normal limits. Physical examination reveals reduced chest expansion on the left side. On auscultation, breath sounds are reduced on the left with some coarse crackles in the left infrascapular region. Routine blood investigations as well as tuberculin skin test, HIV test, immunoglobulin levels, sweat test, ECG, and echocardiography are normal. Spirometry reveals an obstructive picture. Chest x-ray demonstrates a small hyperlucent left lung. Which of the following findings is most likely to be seen on the CT pulmonary angiogram in this patient?

Mehdi Terbi

Choices:

1. Left-sided pneumothorax with a complete collapse of the left lung
2. Massive pulmonary embolism in the left main pulmonary artery with a complete infarction of the left lung
3. Reduced pulmonary vascularity and lung volume on the left side with cystic-varicose bronchiectasis in the left lower lobe
4. A mass obstructing the left lower bronchus with a complete collapse of the left lower lobe and hyper-expansion of the remaining portion of the left lung

Answer: 3 - Reduced pulmonary vascularity and lung volume on the left side with cystic-varicose bronchiectasis in the left lower lobe

Explanations:

- The patient's clinical presentation is most consistent with Swyer-James-MacLeod syndrome. The hyperlucency seen on a CXR in Swyer-James-MacLeod syndrome (SJMS) can be mistaken for a pneumothorax. Therefore, it is paramount that clinicians and radiographers maintain a high index of suspicion in patients with apparent hyperlucent hemithorax.
- Lung function tests in SJMS demonstrate reduced lung volume and small airway obstruction, which is not reversible with bronchodilators.
- It is important for clinicians to have a high index of suspicion for SJMS in patients with the label of asthma, who suffer recurrent infections and gain little benefit from bronchodilator therapy.
- The hyperlucency of a single lung in SJMS is caused by a reduction of the pulmonary blood flow to that lung. This is demonstrated best on a CT pulmonary angiogram, which shows hypoplastic pulmonary vasculature on the affected side, but can also be proved with a ventilation/perfusion scan, which shows a matched ventilation and perfusion defect on the affected side.

Monica Terhi

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Research Concepts:

Swyer-James-MacLeod Syndrome



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Moh'd Terbi

Question 863: A 4-year-old male presents at the emergency department with a brief episode of loss of consciousness. It was noticed that after his mother refused to give him a chocolate bar, he had a short cry, stopped breathing, had bluish discoloration of his lips, and fainted. After 30 seconds, he regained consciousness and felt a little bit tired. His father had a similar episode when he was a child. The vital sign shows a temperature of 37.2 C (98.96 F), heart rate 100/min, and a respiratory rate of 25 breaths per minute. He is alert and conscious. The physical exam shows a slightly pale palpebral conjunctiva, anicteric sclera, no nasoaural discharge, and no cervical lymphadenopathies. Chest examination reveals symmetrical chest expansion, no retractions, and clear breath sounds in both lung fields. A cardiac examination reveals no murmur. The neurological examination is unremarkable. A complete blood count shows a hemoglobin of 9 mg/dL, hematocrit 40%, WBC 10.0 microliters, segmenters 60%, lymphocytes 30%, platelet count 170,000/mcl, MCV 60 micrometers, and a reticulocyte count of 20,000 microliters. Which of the following will be the best treatment for his condition?

Michel Terbi

Choices:

1. Diazepam
2. Folate
3. Iron
4. Phenobarbital

Answer: 3 - Iron

Explanations:

- Breath-holding spells are common in the pediatric population, especially between the ages of six months to 6 years.
- Cyanotic breath-holding spells are most commonly a result of temper tantrums. The trigger for these episodes is anger or frustration of the child, who will typically cry for a brief period, become silent, stop breathing, and become cyanotic. The patient usually recovers in less than a minute, regains consciousness; and after the episode gasping for air may occur, and the child may seem tired.
- It may occur in children who have a normal neurological exam and in children who meet age-appropriate developmental milestones. Normally, breath-holding spells do not affect the subsequent neurological development of a child.
- This child has iron-deficiency anemia, which is prevalent among children with breath-holding spells. They can be given iron supplementation with a starting dose of 4 to 6 mg/kg/day. Iron treatment can be given even if the child does not have iron deficiency since it may decrease spells' frequency. Diazepam and phenobarbital are not needed for this patient because he does not have a seizure. Folate supplementation will not affect the condition of this patient.

Mehri Tehrani

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Research Concepts:

Breath Holding Spells

StatPearls Knowledge Base

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Moh'd Terbi

Question 864: A 5-year-old male is brought in for evaluation. He seems to have trouble with exercise programs at school, significantly more frequently than his classmates. He has been and still is uncoordinated, grew considerably slower than his brothers, and often had difficulties in hopping and trying to climb. A medical evaluation consequently shows an overall increase in creatine kinase with proximal muscle fatigue. A genetic test reveals the expected mutation and X-linked inheritance. Given the likely diagnosis, which of the following with slow the progression of muscle weakness in the early disease course?

Choices:

1. Glucocorticoids
2. Immunoglobulin
3. Rituximab
4. Gene therapy

Moh'd Terbi

Answer: 1 - Glucocorticoids

Explanations:

- Muscular dystrophy most often results from defective or absent glycoproteins in the muscle membrane. Each type of muscular dystrophy results from different gene deletions or mutations, causing various enzymatic or metabolic defects.
- X-Linked dystrophies include Becker (benign pseudohypertrophic) and Duchenne (pseudohypertrophic) dystrophy.
- Glucocorticoids, administered as prednisone at a dose of 0.75 mg/kg/day, significantly slow the progression of muscular dystrophy for up to 3 years.
- Patients with Duchenne muscular dystrophy can survive around 20 years, but the condition is fatal in 100% of cases.

Mohd Terbi

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Research Concepts:

Muscular Dystrophy




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Question 865: A 12-year-old male presents to the clinic with a chief complaint of recurrent migraines. The medication chosen to treat his migraines prophylactically is known to precipitate kidney stones and belongs to the class of drugs called anti-epileptic drugs (AEDs). What is another notable, and life-threatening side effect of the drug?

Choices:

1. Metabolic acidosis
2. Myocardial infarction
3. Malignancy
4. Benign prostatic hyperplasia

Moh'd Terbi

Answer: 1 - Metabolic acidosis

Explanations:

- Topiramate is FDA approved for the prophylaxis of migraine headaches in adults and children 12 years of age or older.
- Kidney stones have been reported in children and adults and patients on a ketogenic diet. The risk of kidney stones may decrease by increasing fluid intake.
- A life-threatening side effect of topiramate is metabolic acidosis.
- Bicarbonate levels should be monitored in patients with symptoms of acute acidosis and ammonia levels in patients with unexpected lethargy, vomiting, or mental status changes.

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Moh'd Terbi

Research Concepts:

Topiramate




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Question 866: A 17-year-old female was brought to the emergency department due to a seizure and subsequent confusion 20 minutes ago. She has also been vomiting since the episode and complaining of vague abdominal pain. The patient was diagnosed with tuberculous meningitis after developing a fever, severe headache, and vomiting two weeks ago and has been on medications. On examination, the patient is confused with slurred speech. The toxicity of one of the medicines she is taking for her meningitis is suspected. Which of the following can be used for the emergency treatment of this patient's presenting symptoms?

Choices:

1. Pyridoxine
2. Vitamin K
3. Pralidoxime
4. Thiamine

Moh'd Terbi

Answer: 1 - Pyridoxine

Explanations:

- Isoniazid (INH) is a potent bactericidal antibiotic used in the treatment of tuberculosis. Treatment with INH therapy has a risk of toxicity, which can be acute or chronic. Acute toxicity presents as altered mental status, seizures, and sometimes status epilepticus.
- The first signs and symptoms of isoniazid toxicity usually appear 30 minutes to two hours after ingestion. They include nausea, vomiting, slurred speech, dizziness, tachycardia, and urinary retention, followed by stupor, coma, and recurrent grand mal seizures.
- The important mechanism is a deficiency of gamma-aminobutyric acid (GABA), which is an inhibitory neurotransmitter. The pyridoxine deficiency induced by the use of INH leads to reduced production of GABA, as it is usually a product of a pyridoxine-dependent decarboxylation reaction.
- Acute toxicity is approached by strict airway management, activated charcoal if the patient presents early, seizure management with the use of benzodiazepines, and pyridoxine administration. This helps with the rapid restoration of GABA stores. Initial care should include airway assessment, intravenous access, complete blood count, toxicology screening, pregnancy test, and intravenous fluids.

Michi's Tech

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Research Concepts:

Isoniazid Toxicity

StatPearls Knowledge Base

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Moh'd Terbi

Question 867: A 17-year-old male patient presents with the complaints of drooping of the right upper lid and abnormal movements of the right lid since early childhood. There is no history of birth trauma or any significant illness in the past. On examination, the right eye is amblyopic with a best-corrected visual acuity of 6/36 with moderate ptosis on the right side with no demonstrable levator function. The right upper eyelid elevates on opening the mouth. Which of the following is most likely involved in the pathogenesis of this condition?

Choices:

1. Aberrant connection between trigeminal and oculomotor nerve
2. Aberrant connection between the facial and trigeminal nerve
3. Aberrant connection between facial and oculomotor nerve
4. Aberrant connection between abducens and oculomotor nerve

Moh'd Terbi

Answer: 1 - Aberrant connection between trigeminal and oculomotor nerve

Explanations:

- The synkinetic movement of the eyelid and the jaw in Marcus Gunn jaw winking syndrome (MGJWS) occurs due to a congenital aberrant connection between motor branches of the trigeminal nerve controlling muscles of mastication and superior division of the oculomotor nerve controlling the levator palpebrae superioris (LPS).
- The momentary retraction of the upper eyelid, the elevation to an equal or higher level than the normal fellow lid upon stimulation of the ipsilateral pterygoid muscle, followed by a rapid return to a lower position, consists the jaw-wink reflex.
- It is associated with synkinetic movements of the upper eyelid during masticating movements of the jaw like chewing, smiling, or sucking.
- MGJWS is one of the congenital cranial dysinnervation disorders (CCDD), and these individuals have variable degrees of blepharoptosis in the resting, primary position.

Mohamed Terbi

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Research Concepts:

Marcus Gunn Jaw Winking Syndrome




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improvement.

Moh'd Terbi

Question 868: A 6-month-old boy is brought in by his mother with a complaint of developmental delay. She says he has been unable to lift his head until now; meanwhile, the other same-age babies around her neighborhood are learning how to sit. She also reports noticing a substance in his diapers that look like orange crystals. She denies any prior high fever or seizure episodes. Physical examination reveals hypotonia of his upper and lower limb muscles with associated abnormal movements. If untreated, which of the following is the most likely complication of this infant's condition?

Choices:

1. Vision loss
2. Obesity
3. Myocardial infarction
4. Nephropathy

Moh'd Terbi

Answer: 4 - Nephropathy

Explanations:

- Hypoxanthine guanine phosphoribosyltransferase (HGPRT) deficiency is an X-linked recessive disorder mainly affecting males. HGPRT is an essential enzyme for salvaging or recycling purine bases released from nucleotide degradation.
- HGPRT deficiency can present as psychomotor delay, other neurologic manifestations, and the observation of orange crystals in the diapers due to crystalluria.
- Lesch-Nyhan syndrome is a severe form of HGPRT deficiency characterized by severe action dystonia, intellectual disability, and self-mutilation.
- A serum uric acid level will help to confirm the diagnosis of HGPRT deficiency. HGPRT enzyme activity can also be checked. High serum uric acid can cause gout with inflammation of the joints, kidney stones, and nephropathy. Vision loss is not related to this syndrome; it is more associated with Marfan syndrome or homocysteinemia. Obesity is associated with Prader-Willi syndrome, as the affected children have constant hunger. Myocardial infarction is associated with familial hypercholesterolemia.

Mohsen Tayebi

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Research Concepts:

Inborn Errors Of Metabolism



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Moh'd Terbi

Question 869: A 7-year-old girl is brought to the hospital with fever, nausea, vomiting, and diarrhea for 2 days. On arrival, the child appears cyanotic and confused. Her vital signs show temperature 103.4 F, heart rate 152/min, respiratory rate 30/min, blood pressure 64/40 mmHg, and oxygen saturation 92%. She has increased pigmentation of the skin and mucous membranes. Which of the following sets of laboratory findings is most likely to be seen in this patient?

Choices:

1. Sodium 130 mEq/L, potassium 3.5 mEq/L
2. Sodium 119 mEq/L, potassium 7.4 mEq/L
3. Sodium 135 mEq/L, potassium 4.0 mEq/L
4. Sodium 149 mEq/L, potassium 4.5 mEq/L

Moh'd Terbi

Answer: 2 - Sodium 119 mEq/L, potassium 7.4 mEq/L

Explanations:

- Acute adrenal crisis often presents with nausea, vomiting, and vascular collapse.
- Addison disease is often precipitated by stress. This includes infection, trauma, surgery, vomiting, or diarrhea
- Hyperpigmentation commonly involves sun-exposed areas. It also includes pressure areas such as elbows and knees. Hyperpigmentation also involves skin creases and mucosal membranes
- The most prominent findings in patients with Addison crisis are hyponatremia, hyperkalemia, and metabolic acidosis.

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Moh'd Terbi

Research Concepts:

Addison Disease




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Question 870: A 4-year-old girl is seen in the emergency department after she was pulled from a swimming pool after drowning. The paramedics resuscitated her on-site and brought her to the emergency department. Her respiratory status gradually deteriorates over the next few hours despite oxygen supplementation. The patient has difficulty breathing, and a chest x-ray shows diffuse bilateral whitening of the lungs. The patient eventually required intubation and mechanical ventilation due to worsening hypoxia. Which of the following is the most likely cause of this patient's symptoms?

Choices:

1. Aspiration pneumonia
2. Pleural effusion
3. Non-cardiogenic pulmonary edema
4. Cardiogenic pulmonary edema

Mohamed Terbi

Answer: 3 - Non-cardiogenic pulmonary edema

Explanations:

- Drowning is generally defined as the process of experiencing respiratory impairment due to immersion/submersion in a liquid medium.
- Aspirated fluid can lead to surfactant washout and dysfunction, increased permeability of the alveolar-capillary membrane, decreased lung compliance, and ventilation/perfusion ratio mismatching.
- This can result from minor to no respiratory complaints to fulminant non-cardiogenic pulmonary edema, with a clinical picture similar to adult or acute respiratory distress syndrome (ARDS).
- Symptoms or complications may not present initially but develop over time.

Moh'd Terbi

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Research Concepts:

Drowning




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Question 871: An 8-month-old female presents to her pediatrician for evaluation. She has a history of recurrent, low-energy long bone fractures. As of late, she has been experiencing frequent and prolonged bruising along with chronic nasal congestion. Skeletal survey reveals dense and sclerotic bone throughout. This patient's disorder is caused by chloride channel dysfunction in which type of cell?

Choices:

1. Osteoclasts
2. Osteoblasts
3. Osteocytes
4. Osteoprogenitor cells

Moh'd Terbi

Answer: 1 - Osteoclasts

Explanations:

- Osteopetrosis is the result of defective osteoclastic bone resorption. This defect leads to sclerotic, dense bone that is prone to fracture.
- Autosomal recessive osteopetrosis has two forms: malignant and intermediate. The malignant form, as in this patient, is due to proton pump or chloride channel dysfunction. The intermediate form is due to carbonic anhydrase II dysfunction.
- Osteopetrosis can cause increased bleeding and infection secondary to the intrusion of sclerotic bone into the marrow space.
- Osteopetrosis frequently leads to cranial nerve deficits due to the narrowing of skull foramina that occurs secondary to osteoclast dysfunction. In the malignant, autosomal recessive variant of osteopetrosis, patients typically have progressive blindness and deafness. Nasal congestion can be due to the disease's deforming forces on the nasal sinuses.

Mom's Tech

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Research Concepts:

Osteopetrosis




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Question 872: A 17-year-old male presents with abdominal pain for one week. He has noticed intermittent blood in the urine without any increased urinary frequency, urgency, pain, or dysuria. The abdominal pain is relatively frequent and intermittent, often radiating to the back. His family history is significant as his father died due to a brain hemorrhage at the age of 35. He denies any recent trauma, fever, or change in bowel habits. On examination, his blood pressure is 154/97 mmHg and his pulse rate is 92 beats per minute. An abdominal examination reveals no tenderness or organomegaly. Urinalysis shows microscopic hematuria. Abdominal ultrasound shows multiple renal cysts bilaterally. What is the most likely mode of inheritance of his disorder?

Choices:

1. Autosomal recessive
2. Autosomal dominant
3. X-linked dominant
4. X-linked recessive

Moh'd Terbi

Answer: 2 - Autosomal dominant

Explanations:

- Polycystic kidney disease (PKD) is a disorder that affects the kidneys and other organs like the liver, pancreas, and spleen and follows the autosomal dominant mode of inheritance. An autosomal dominant form occurs in young adults.
- The most likely cause of death in a patient with autosomal dominant polycystic kidney disease is the rupture of a berry aneurysm.
- PKD causes the kidneys to become enlarged as a result of growing cysts which can lead to kidney failure. PKD causes clusters of fluid-filled cysts to develop in the kidneys. The cysts and the loss of renal parenchyma that accompanies them, interfere with the kidney's ability to filter waste products from the blood and ultimately result in renal failure.
- An autosomal recessive form of polycystic kidney disease occurs in infants.

Mona Terbi

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Research Concepts:

Polycystic Kidney Disease




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Question 873: An 18-month-old child is brought by her mother due to delayed developmental milestones. Birth history is insignificant. Vital signs are pulse rate 125/min, blood pressure 100/61mmHg, respiratory rate 25/min, and temperature 98.6F (37°C) On examination; there is a demarcated reddish discolouration involving the right cheek area which has gradually increased with time. Which of the following is recommended in this condition?

Choices:

1. Annual neurological examination
2. Annual ophthalmologic examination
3. Annual endoscopic examination
4. Annual echocardiography examination

Moh'd Terbi

Answer: 2 - Annual ophthalmologic examination

Explanations:

- Sturge-Weber syndrome is characterized by a facial port-wine stain. Leptomeningeal abnormalities, intracranial calcifications, and glaucoma are often associated with the condition as well.
- An annual ophthalmologic examination is recommended even if the early evaluation does not detect glaucoma.
- The goal of glaucoma treatment is to reduce the intraocular fluid which decreases the intraocular pressure with subsequently decreased the risk of vision loss.
- Ocular ultrasound can demonstrate diffuse choroidal thickening which suggests choroidal hemangioma.

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Moh'd Terbi

Research Concepts:

Sturge-Weber Syndrome




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Question 874: A female is born with a single perineal opening. An abdominal mass is also felt on examination. In the newborn period, which of the following poses the greatest threat to the patient's renal health and requires urgent identification and management?

Choices:

1. Hydrocolpos
2. Tethered cord
3. Urinary tract infection
4. Aberrant renal vasculature

Moh'd Terbi

Answer: 1 - Hydrocolpos

Explanations:

- The patient is a case of cloacal malformation. Cloacal malformations are rare congenital anomalies characterized by a confluence of the gastrointestinal, genital, and urologic systems which exits the perineum through a single orifice.
- Hydrocolpos can cause compression of the trigone of the bladder, causing obstructive uropathy. An unidentified or untreated hydrocolpos can cause acute renal insufficiency or renal failure.
- A mass can be felt due to vaginal distension due to the accumulation of fluid. Pelvic ultrasound should be performed in the immediate newborn period, and drainage of the hydrocolpos should be performed if present.
- Tethered cord and urinary tract infections can cause renal damage over months or years.

Wahid Terbi

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Research Concepts:

Cloacal Malformations




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Question 875: A 2-year-old girl after extensive evaluation for stridor is diagnosed with a right-sided aortic arch on chest CT angiogram. She is currently planned for surgical correction due to the anomalous aortic arch. Echocardiography is performed preoperatively to rule out any underlying congenital heart disease. Which of the following diagnosis puts her at higher risk for having associated congenital heart disease?

Choices:

1. Right aortic arch with mirror image branching
2. Right aortic arch with aberrant left subclavian artery
3. Pulmonary vascular sling
4. Situs ambiguous

Moh'd Terbi

Answer: 2 - Right aortic arch with aberrant left subclavian artery

Explanations:

- Right aortic arches are associated with congenital heart disease (CHD) 1-2% of the time, the most common association being conotruncal anomalies which include truncus arteriosus, tetralogy of Fallot, transposition of great vessels.
- Interestingly, the sidedness and branching of the aortic arch determine the risk of CHD with mirror imaging branching having a far lower risk compared to the presence of aberrant left subclavian artery.
- Right aortic arches are not associated with situs ambiguous or pulmonary slings.
- Mirror imaging branching is neither associated with vascular rings nor CHD; aberrant subclavian branching is associated with vascular rings and increased risk of CHD.

Moh'd Terbi

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Research Concepts:

Vascular Aortic Arch Ring




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Question 876: A 17-year old presents to the emergency department with complaints of a fever, sore throat, and dysphagia for three days. He says that over the last few days, his sore throat has gotten worse. He denies any cough, chest pain, and abdominal pain. On examination, his temperature is 101 F (38.3 C), and the pulse is 97/min. Oropharyngeal examination shows extensive right peritonsillar swelling, but the tonsils do not appear to be inflamed. The uvula has deviated to the left side. CBC with differential shows a white blood cell count of 16,000/microlitre. Gram-staining is done by aspirating the peritonsillar abscess, and gram-positive cocci are found. This organism shows complete hemolysis on blood agar. What is the most likely organism causing this disease?

Choices:

1. Streptococcus pneumonia
2. Streptococcus mutans
3. Streptococcus mitis
4. Streptococcus pyogenes

Moh'd Terbi

Answer: 4 - Streptococcus pyogenes

Explanations:

- Peritonsillar abscess or Quincy is caused by group A streptococci (Streptococcus pyogenes). It is very similar to tonsillitis, but the tonsils are normal, and the condition is unilateral.
- The uvula always deviates to the opposite side of tonsillar enlargement. Group A streptococcus is notorious for causing many types of infections, but it does not cause gangrenous lesions in patients with diabetes mellitus.
- Aspiration with a wide-bore needle serves both diagnostic and therapeutic purposes.
- Cocci that show complete hemolysis on blood agar are Streptococcus pyogenes, Streptococcus agalactiae, and Staphylococcus aureus. Among these, Streptococcus pyogenes most commonly causes a peritonsillar abscess.

Mimi Terbi

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Research Concepts:

Peritonsillar Abscess




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Question 877: A 5-year-old child presents with slight breathlessness on exertion. On examination, there is an absence of cyanosis and hypertrophy of the right ventricle. On cardiac catheterization, the pressure in the pulmonary artery is the same as in the aorta. What is the likely diagnosis?

Choices:

1. Patent ductus arteriosus
2. Patent foramen ovale
3. Tetralogy of Fallot
4. Coarctation of the aorta

Moh'd Terbi

Answer: 1 - Patent ductus arteriosus

Explanations:

- The increased pulmonary artery pressure without cyanosis is virtually diagnostic of patient ductus as an isolated defect.
- Early symptoms are uncommon, but in the first year of life may include increased work of breathing and poor weight gain.
- The ductus arteriosus is a fetal blood vessel that closes soon after birth. In a PDA, the vessel does not close, resulting in irregular transmission of blood between the aorta and the pulmonary artery. PDA is common in newborns with persistent respiratory problems such as hypoxia. Premature newborns are more likely to be hypoxic and have PDA due to underdevelopment of the heart and lungs.
- A PDA allows a portion of the oxygenated blood from the left heart to flow back to the lungs by flowing from the aorta to the pulmonary artery. If this shunt is substantial, the neonate becomes short of breath. This uses more calories than normal and interferes with feeding. This condition is called congestive heart failure.

Mohit Tehri

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Research Concepts:

Patent Ductus Arteriosus




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improvement.

Moh'd Terbi

Question 878: A 16-year-old young boy is brought to the clinic by his father due to difficulty in walking. He has had minimal right-sided hip pain for several weeks and has now started walking with a limp. After the boy had an accident while playing on the trampoline, his father noticed that he had started limping and sought medical care for him in the clinic. He is overweight with a BMI of 33 kg/m2. On examination, he is seen preferring his left leg. In a seated position, his right leg is rotated outwards. There is a decrease in the passive range of motion due to pain with internal rotation of his right hip joint. X-ray of the hip joint shows discontinuation between the head and neck of the femur. The appearance can be best described as “a melting ice cream cone.” What is the most appropriate treatment for this patient?

Choices:

1. Immobilization
2. Surgical pinning of the femoral head
3. NSAIDs and activity restriction
4. Physical therapy

Mohsen Terbi

Answer: 2 - Surgical pinning of the femoral head

Explanations:

- The patient has presented to the clinic with slipped capital femoral epiphysis. (SCFE)
- Risk factors for slipped capital femoral epiphysis include adolescence and obesity.
- A slipped capital femoral epiphysis (SCFE) is treated with surgical pinning of the femoral head.
- Once slipped capital femoral epiphysis is suspected, avoid weight-bearing until after surgery. In severe cases, avascular necrosis of the femoral head may occur.

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Moh'd Terbi

Research Concepts:

Slipped Capital Femoral Epiphysis




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Question 879: A 16-year-old female presents to the emergency department with altered mental status. Her mother reports that the patient developed a fever and productive cough around 48 hours ago, and after that, she has vomited multiple times. Her past medical history is significant for type 1 diabetes mellitus. Her vitals on arrival show a blood pressure of 86/58 mmHg and a pulse rate of 120 beats per minute. On physical examination, she is drowsy but arousable, her skin turgor is decreased, and her skin is cold to touch. Her chest x-ray shows right lower lobe infiltrates. Laboratory analysis revealed undetectable cortisol level, elevated TSH level, and low free T4 level. The emergency provider ordered a repeat cortisol level and started levothyroxine along with intravenous (IV) fluids. Which is of the following complication can develop in this patient?

Choices:

1. Adrenal crisis
2. Thyroid storm
3. Hypertensive crisis
4. Acute Pancreatitis

Moh'd Terbi

Answer: 1 - Adrenal crisis

Explanations:

- Type II polyglandular autoimmune syndrome (PAS-2) is diagnosed by occurrence in the same patient of at least 2 out of 3 manifestations, which includes primary adrenal insufficiency (Addison disease), autoimmune thyroid disease-causing Graves disease or hypothyroidism, and type 1 diabetes mellitus.
- Care should be taken to treat patients with thyroxine as this can precipitate life-threatening Addisonian crisis if the patient has undiagnosed adrenal insufficiency.
- In many cases, the diagnosis of PAS-2 may be delayed due to the heterogeneous presentation.
- Patients with PAS-2 and their family members should be monitored long-term due to the risk of development of organ-specific dysfunction over time.

Mon'd Terbi

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Research Concepts:

Polyglandular Autoimmune Syndrome Type II




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Question 880: A 10-year-old male is referred to the healthcare provider concerned that he is not paying attention in class. There is suspicion that his hearing is impaired. He has not had an adenoidectomy or tonsillectomy. On examination, bedside hearing tests confirm moderate bilateral hearing loss. He allows the clinician to perform a nasendoscopy in the clinic, which reveals grossly enlarged adenoid tissue. Rinne test is negative bilaterally. Weber test does not lateralize. What is the most likely diagnosis?

Choices:

1. Bilateral otitis media with effusion
2. Bilateral otitis externa
3. Bilateral congenital sensorineural hearing loss
4. Bilateral wax impaction

Moh'd Terbi

Answer: 1 - Bilateral otitis media with effusion

Explanations:

- One of the most common presentations to otolaryngology practitioners is pediatric complications of lymphoid hyperplasia. In addition, enlarged tonsillar and adenoid tissue can cause obstructive sleep apnea and contribute to otitis media development with effusion (OME; glue ear).
- OME is a collection of serous fluid within the middle ear. This impedes the vibrations of the ossicles and leads to conductive hearing loss.
- Conductive hearing loss leads to bone conduction being louder than air conduction, and therefore Rinne test is negative. With symmetrical bilateral disease, the Weber test would be expected to remain central.
- While wax impaction could also lead to a bilateral conductive hearing loss, it is rare for this to persist to an extent where schooling is affected. Otitis externa can also cause conductive hearing loss. However, it is usually accompanied by otalgia and otorrhea. Congenital sensorineural hearing loss usually presents much earlier than this, and the Rinne test would be positive bilaterally.

Monica Tarun

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Research Concepts:

Weber Test



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Moh'd Terbi

Question 881: A one-month-old infant arrives at the emergency department after two weeks of progressive non-bloody, non-bilious emesis that was initially diagnosed as reflux but has worsened despite changing formulas and feeding practices. On arrival, the baby has sunken eyes, dry mucous membranes, a heart rate of 190/min, a respiratory rate of 36/min, and blood pressure of 92/64 mmHg. There are spontaneous and adequate respirations but delayed capillary refill. Fluid resuscitation is immediately ordered, and three failed attempts at peripheral intravenous access have occurred in the arms and legs. Which of the following is a possible complication of an additional non-extremity site that can be used for peripheral intravenous access?

Choices:

1. Sublingual edema
2. Subcutaneous air in the neck
3. Abdominal ascites
4. Intracranial infection

Mah'd Terbi

Answer: 4 - Intracranial infection

Explanations:

- When extremities are not available for intravenous access, scalp veins are an alternative for peripheral venous access. Scalp veins can be used for peripherally inserted venous catheters without an increase in complications than other insertion sites.
- Scalp veins offer ease of stabilization and ease of access in this age group. Scalp veins in neonates/infants typically have less overlying subcutaneous fat than other peripheral sites to allow easier visualization and cannulation. Intracranial infection is a rare but possible complication from scalp vein catheterization for peripheral venous access.
- The neck, mouth, abdomen, and chest wall are not ideal areas for peripheral venous access. Scalp vein cannulation is indicated in young patients requiring intravenous fluids or other medications, where peripheral intravenous access is not possible.
- Epidural abscesses are a reported complication from scalp vein catheterization for peripheral venous access.

Mona Terki

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Research Concepts:

Scalp Vein Catheterization




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improvement.

Moh'd Terbi

Question 882: A 7-day-old male presents with difficulty in breathing. He was born full-term to a 30-year-old mother with no birth complications. His mother had drooping eyelids, difficulty in swallowing, and generalized muscle weakness before his birth. The vital signs show a temperature of 37.5 C (99.5 F), cardiac rate 140/min, respiratory rate of 70 breaths/min, and oxygen saturation of 90%. The physical examination reveals drooping of the right eyelid, alar flaring, intercostal retractions, and generalized muscle weakness. Arterial blood gas shows a pH of 7.2, PCO_2 of 45 mmHg, PO_2 60 mmHg, and HCO_3 of 24 mmol/L. He was intubated and connected to a mechanical ventilator. Which of the following is highly specific to confirm his diagnosis?

Choices:

1. Antibody testing
2. Electromyogram/nerve conduction study
3. Imaging of the thorax
4. Nerve biopsy

Moh'd Terbi

Answer: 1 - Antibody testing

Explanations:

- Myasthenia gravis (MG) is a disorder that causes weakness in mainly the voluntary muscles of the body, mainly of the eyes, mouth, throat, arms, and legs. It most often affects adults, but it can sometimes happen in children. Neonatal myasthenia gravis is a major category of neuromuscular junction disorders that share many pathophysiologic and clinical features with adult autoimmune myasthenia gravis yet display distinct demographic patterns, clinical features, and therapeutic challenges.
- Neonatal MG is a temporary form of myasthenia gravis. Babies born to mothers with myasthenia gravis are susceptible to it. It's due to the mother's antibodies cross over to the baby growing in the mother's uterus. As the name suggests, it usually lasts only a short time. The symptoms go away weeks or months after birth, as the antibodies are naturally replaced. Babies are not at greater risk of developing myasthenia gravis later in life.
- The ocular symptoms are often the first or primary manifestation of the disease at all ages. Dysphagia, dysarthria, nasal speech, extremity weakness, and respiratory distress may occur in conjunction with ocular symptoms.
- Antibody testing is usually highly specific for myasthenia gravis. In the appropriate clinical setting, positive antibody titers confirm the diagnosis, and further testing may only be indicated if the clinical presentation is atypical. Antibody testing only involves serum testing and, especially in the case of acetylcholine receptor antibodies, is relatively inexpensive and straightforward. Thus, this test is easy to obtain in children. Electromyogram/nerve conduction studies and imaging of the thorax are tests that are also used for the diagnosis of myasthenia gravis.

Mohit Tehri

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Research Concepts:

Neonatal Myasthenia Gravis



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Moh'd Terbi

Question 883: A 5-year-old girl presents with a productive cough and fever for two days. She has no significant past medical history, and her immunizations are up to date. Vital signs include temperature 102 F (38.9 C), heart rate 124/min, blood pressure 110/70 mmHg, respiratory rate 32/min, and oxygen saturation 97% on room air. She appears well hydrated, and there is no nasal flaring or intercostal retractions. Fine crackles are heard over the left lung base. What is the most appropriate next step?

Choices:

1. Obtain a chest radiograph
2. Obtain a viral respiratory panel
3. Recommend antipyretic medication and close observation
4. Prescribe oral amoxicillin

Moh'd Terbi

Answer: 4 - Prescribe oral amoxicillin

Explanations:

- This child has community-acquired pneumonia (CAP). Patients with CAP typically present with abrupt onset of symptoms, fever and/or chills, and focal findings on lung auscultation.
- Streptococcus pneumoniae, the most common cause of CAP, is typically treated with oral amoxicillin.
- Chest radiographs are not required to diagnose CAP in well-appearing, clinically stable children with relatively mild symptoms. Chest radiographs may be useful for patients with severe disease, recent or recurrent pneumonia or underlying medical conditions, or when the diagnosis is clinically uncertain.
- Children with viral pneumonia typically have a gradual onset of symptoms and diffuse, bilateral findings on lung examination. Because this child's clinical presentation is consistent with bacterial pneumonia, a viral respiratory panel is not indicated, and observation alone is inappropriate.

Mahir Tarbi

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Research Concepts:

Pediatric Pneumonia




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Question 884: A 16-year-old female is brought to the emergency department (ED) by ambulance with tremors, hyperreflexia, a high-grade fever, and marked confusion. Her friends said they were all at a rave before coming to the ED and are unsure if she took any drugs. On reviewing her medical records, she has a history of generalized anxiety disorder and is on fluoxetine. Which of the following is most likely to be seen on a urine drug screen?

Choices:

1. Lysergic acid diethylamide (LSD)
2. Cocaine
3. 3,4-Methylenedioxymethamphetamine (MDMA)
4. Crystal methamphetamine

Moh'd Terbi

Answer: 3 - 3,4-Methylenedioxymethamphetamine (MDMA)

Explanations:

- Fluoxetine is a selective serotonin reuptake inhibitor (SSRI).
- Fluoxetine is used to treat generalized anxiety disorder.
- Fluoxetine carries the risk of serotonin syndrome if combined with other substances that also increase serotonin levels (MDMA).
- LSD, cocaine, and crystal methamphetamine do not produce similar consequences by raising serotonin levels.

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Research Concepts:

Moh'd Terbi

Fluoxetine




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Question 885: A 16-year-old female patient presents complaining from general weakness and chest pain for a few days. She also reports subjective fever and chills in addition to exercise intolerance. Her past medical history is significant for mitral valve prolapse, managed with observation and follow up visits. Family history is insignificant. Vital signs show blood pressure 110/70 mmHg, pulse 70 beats per minute, respiratory rate 15 breaths per minute and temperature 38.8 C (101.84 F). Physical exam reveals a grade 3 holosystolic murmur in the apical area. lungs are clear to auscultation. The abdomen is soft with no tenderness or organomegaly. Complete blood count shows hemoglobin of 13.2 g/dL, leukocytes 16,000/mm3, and platelets 190,000/mm3. What is the most appropriate next step in managing this patient?

Choices:

1. Start vancomycin empirically
2. Start amoxacillin empirically
3. Blood culture
4. Electrocardiogram

Moh'd Terbi

Answer: 3 - Blood culture

Explanations:

- Blood specimens should be attained as early as possible to aid in diagnosis and guide management of infective endocarditis.
- In approximately 90% of cases of endocarditis, the causative agent is identified from the first 2 blood cultures
- It is well known that antimicrobial pretreatment can reduce the yield of blood culture to 50% to 60%.
- For empirical therapy,it is recommended to start with vancomycin.

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Moh'd Terbi

Research Concepts:

Endocarditis




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Question 886: A 16-year-old male patient reports with a complaint of retained primary teeth. The general health of the patient is excellent, with no history of allergies or hospitalizations. He has a female sibling with no relevant dental problem. Physical evaluation reveals that he is well built with no abnormalities in his hair, skin, or nails. Intraoral examination reveals that 16 of his permanent teeth have erupted which were of normal size and shape. He has 14 retained primary teeth. An orthopantomogram reveals the presence of primary teeth and few permanent teeth. The nonerupted teeth are covered with bone and had well-circumscribed follicles. Which of the following endocrine abnormalities is likely to be associated with the delayed eruption of teeth?

Choices:

1. Hypothyroidism
2. Hypocortisolism
3. Diabetes
4. Cushing syndrome

Moh'd Terbi

Answer: 1 - Hypothyroidism

Explanations:

- Congenital hypothyroidism is commonly complicated by delayed tooth eruption.
- The endocrinal disorders associated with delayed eruption are hypothyroidism, hypopituitarism, and hypoparathyroidism.
- The delayed eruption may also occur due to the effect of local factors (mucosal barrier, gingival fibromatosis, odontogenic and non-odontogenic tumors, premature loss of the primary tooth, radiation damage).
- Various syndromes such as down syndrome, Turner syndrome, Gardner syndrome, Cleidocranial dysostosis, Anhidrotic ectodermal dysplasia, Hutchinson–Gilford syndrome, Bloch–Sulzberger, Apert syndrome, Axenfeld–Rieger Syndrome have shown to cause a delayed eruption.

Mon'd Terbi

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Research Concepts:

Anatomy, Head and Neck, Tooth Eruption




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Question 887: A 16-year-old female patient is referred for colicky abdominal pain. Her vital signs were blood pressure: 95/60 mmHg, pulse rate: 98 beats per minute, respiratory rate: 18/min, and temperature: 37.8 C. Following intravenous hydration with 500 ml of normal saline, her vitals are blood pressure: 100/70 mmHg, pulse rate: 88 bpm, respiratory rate: 17/min, and temperature: 37.5 C. Her abdominal physical examination reveals vague right lower quadrant tenderness without guarding or rebound tenderness. The abdominal ultrasound elucidates renal echogenic medullary pyramids without hydronephrosis. It also indicates her resistive index is normal bilaterally. What is the next preferred step in management?

Choices:

1. Cystoscopy with retrograde pyelograms
2. Collecting a 24-hour urine for chemical analysis (kidney stone prevention panel)
3. Obtaining intravenous pyelography
4. Low calcium, low sodium, and high potassium diet

Moh'd Terbi

Answer: 2 - Collecting a 24-hour urine for chemical analysis (kidney stone prevention panel)

Explanations:

- Several imaging modalities can diagnose medullary sponge kidney. A plain film KUB may show calcifications, but this is the least sensitive and least specific imaging test. Renal ultrasound may show characteristic echogenic medullary pyramids, but ultrasound is a very technologist and radiologist dependent modality that can easily miss the diagnosis if performed by inexperienced personnel.
- An intravenous pyelogram will demonstrate a classic paintbrush-like appearance within the dilated medullary collecting ducts which is characteristic of medullary sponge kidney. However, this test is no longer used in most clinical practices.
- For calcium stones, initial recommendations include a high fluid intake sufficient to generate a minimum of 2,000 mL of urine per day. In general, a diet that is low in sodium, normal in calcium, high in potassium, and low to normal in protein may be helpful. Limiting excessive dietary oxalate is also recommended for calcium oxalate stone formers.
- A 24-hour urine test is recommended to help optimize the urinary chemistry in motivated patients with medullary sponge kidney who develop stones. These patients will tend to have a higher incidence of renal leak type hypercalciuria and hypocitraturia than most calcium stone formers. If this is confirmed by the 24-hour urine test, these disorders can be treated with thiazide diuretics for the hypercalciuria and potassium citrate supplements for the hypocitraturia.

Mehri Tehrani

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Research Concepts:

Medullary Sponge Kidney




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Moh'd Terbi

Question 888: A 28-year-old woman is diagnosed with hepatitis B during the third semester of pregnancy, and she gives birth to a healthy baby girl. What is the most appropriate treatment for this neonate within the first 48 hours of birth?

Choices:

1. HBsAg immunoglobulin only
2. HBsAg vaccine only
3. HBsAg vaccine and HBsAg immunoglobulin
4. Hepatitis B and C vaccines

Moh'd Terbi

Answer: 3 - HBsAg vaccine and HBsAg immunoglobulin

Explanations:

- This neonate should receive hepatitis B immunoglobulin (HBIG) as soon as possible after birth.
- It must be given within 12 hours of birth.
- HBIG efficacy goes down markedly if the immunotherapy is delayed.
- The hepatitis B vaccine should be administered within 48 hours of birth.

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Research Concepts:

Moh'd Terbi

Vaccine (Vaccination)




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Question 889: A 23-month-old male presents for an evaluation. He is playing quietly with his toys while the provider talks to his mother. He stacks a tower of 5 toy cubes, draws a straight horizontal line, and combines words into three-word phrases with a vocabulary of 50+ words. His mother is concerned because when she takes him to daycare, he screams and bangs his head in a wall when she is leaving him. What is the best step to do in regards to this behavior?

Choices:

1. Follow up in 2 months
2. Evaluate with an M-CHAT (modified checklist for autism in toddlers)
3. Explain to mother how to do time-out
4. Reassure mother that this is normal for his age

Moh'd Terbi

Answer: 4 - Reassure mother that this is normal for his age

Explanations:

- Temper tantrums in the form of headbanging can be present in normally developing children. This rarely causes a head injury. Tantrums are very common after one year of age. This is because, at this age, children cannot express themselves with verbal language. This is also the same reason why tantrums decrease at about three years of age when they can verbally express their needs.
- When a tantrum happens, and the parents show empathy and reassurance to the child's distress, it shapes their future emotional development and resilience.
- A temper tantrum should not be ignored. The parent can allow the tantrum to continue but ensure that the child is in a safe environment.
- Children with autism spectrum disorder can present with headbanging but will have other developmental delays.

Moh'd Terbi

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Research Concepts:

Child Development




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Question 890: An honor student who suffers from panic attacks, especially during exams, is prescribed the tricyclic antidepressant imipramine. To keep awake, the student takes more than a handful of these pills. Of the following, what is the most likely symptom of an acute overdose?

Choices:

1. Seizures
2. Anorexia
3. Diaphoresis
4. Excessive diarrhea

Moh'd Terbi

Answer: 1 - Seizures

Explanations:

- Tricyclic overdose can result in hyperactivity of the central nervous system.
- The most likely presentation after an overdose of tricyclic antidepressants is seizures.
- During the early phase, one may develop chest pain, palpitations, and even hypotension.
- The physical exam should focus on the cardiotoxicity which is very similar to quinidine. The patient may have altered mental status, hypotension, ileus, rigidity, and dry skin.

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Moh'd Terbi

Research Concepts:

Tricyclic Antidepressant Toxicity




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Question 891: A 1-year-old child brought by the mother with complaints of rejection of solid food, dysphoria, swelling on his feet, legs, upper extremities, and decreased urine output for the past 2 days. The child was started on rice milk, fruits, rice poultry, and vegetable broth at the age of 6-months. On examination, laryngeal edema was noted. The child weighed 7.2 Kg. Laboratory reports revealed a hemoglobin level of 6.1 mg/dl, the total protein level of 3 g/dl, albumin levels were 1.365 g/dl (45.5 %), total serum IgE levels were 30 KUA/L, specific serum IgE levels for milk were 0.64 KUA/L, albumen levels of 1.74 KUA/L and no protein in the urine. Which of the following is mostly observed in the patient with such a condition?

Choices:

1. Hepatomegaly
2. Splenomegaly
3. Hyperthermia
4. Hypercalcemia

Moh'd Terbi

Answer: 1 - Hepatomegaly

Explanations:

- Kwashiorkor is caused by protein deficiency. The clinical manifestations of kwashiorkor include peripheral pitting edema that begins in the dependent regions and proceeds cranially, marked muscle atrophy, abdominal distension (with/without dilated bowel loops, and hepatomegaly), round face (prominence of the cheeks, or “moon facies”).
- These features are also present on examination, i.e., thin, dry, peeling skin with confluent areas of scaling and hyperpigmentation, dry, full, hypopigmented hair that falls out or is easily plucked, hepatomegaly (from fatty liver infiltrates), growth retardation, psychic changes (anorexia, apathy), skin lesions/dermatitis (perineum, groin, limbs, ears, armpits), and subcutaneous fat retention with loose inner inguinal skin folds.
- There are ten primary principles used universally for the treatment of patients who are admitted for Kwashiorkor. These principles are done in different phases from the time the child arrives, requiring emergency stabilization through eventual rehabilitation.
- Hepatomegaly (from the fatty liver), cardiovascular system collapse/hypovolemic shock, urinary tract infections, abnormalities of the gastrointestinal tract including atrophy of the pancreas with subsequent glucose intolerance, atrophy of the mucosa of the small intestine, lactase deficiency, ileus, bacterial overgrowth, which can lead to bacterial septicemia and death, loss of immune function, antioxidant function, subsequent infections, septic shock, and death These are some of the complications related with Kwashiorkor.

Monica Terkh

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Research Concepts:

Kwashiorkor




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Moh'd Terbi

Question 892: A 5-year-old boy with Down syndrome has attended 3 years of a special preschool. He is very social and engages well in reciprocal play with her peers. He has an adequate vocabulary with good gestures, but he has only 50% intelligibility by those who do not know him well. He is improving with speech therapy. His gross motor skills are below age norms, and fine motor skills include dressing by pulling on clothes. He cannot use buttons or zippers. He is toilet trained for stools but has night-time enuresis 1-2 nights/week and day-time accidents once a week. Which of the following is the next best step in the management of this patient?

Choices:

1. Inclusion in the mainstream classroom
2. Vasopressin
3. Psychological therapy with an aim to normalize IQ test score
4. Residential school placement

Moh'd Terbi

Answer: 1 - Inclusion in the mainstream classroom

Explanations:

- Mainstream kindergarten is appropriate for this child.
- Mainstream education will facilitate the development of social skills and learning.
- While the child's basic cognitive level may not change, the acquisition of social and adaptive skills with role modeling and support by peers will improve overall functioning and adaptation, as well as long-term outcomes.
- Children with Down syndrome can be mainstreamed with support and benefit from interaction with typically developing peers.

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Moh'd Terbi

Research Concepts:

Developmental Delay




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Question 893: A 17-year-old female presents for recurrent headaches. The headaches occur once a month and last at least four hours. They are worse with bright light and loud noises and are associated with nausea. She denies dizziness, loss of consciousness, or a history of head trauma. Her family history is noncontributory. Vital signs are blood pressure 125/80 mmHg, heart rate 60 beats per minute, respiratory rate 16 breaths per minute, and temperature of 98.6 F (37 C). While discussing treatment options, the patient states she is afraid of injections. Given the likely diagnosis, which of the following is the best oral agent for this patient?

Choices:

1. Sumatriptan
2. Valproic acid
3. Almotriptan
4. Propranolol

Moh'd Terbi

Answer: 3 - Almotriptan

Explanations:

- Almotriptan is indicated for acute treatment of migraine headache in adolescents who have a history of migraine attacks with or without aura, with the attacks usually lasting =4 hours when untreated. The safety and efficacy of almotriptan have not been established in patients 12 years of age.
- Almotriptan is a swallowable tablet recommended in patients who prefer oral tablets over injections.
- If a patient does not respond to almotriptan with the first migraine attack, it is recommended to reconsider the diagnosis before administering to treat a subsequent attack.
- The safety and efficacy of sumatriptan have not been established in patients 18 years of age.

Mohd Terbi

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Research Concepts:

Almotriptan




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Question 894: A 6-month-old infant presents to the clinic for a well-child visit. He is meeting his developmental milestones and has been feeding well. His parents have no concerns. His head circumference at his last visit was at the 23rd percentile; today, it is the 51st. The anterior fontanelle is open. The rest of his physical examination, including neurologic examination, is normal. Which of the following is the next best step in the management of this patient?

Choices:

1. Genetic testing
2. Head ultrasound
3. Reassurance
4. Computed tomography (CT) scan of the head

Moh'd Terbi

Answer: 2 - Head ultrasound

Explanations:

- An infant who rapidly crosses one or more major percentile lines on his or her growth curve should raise concern.
- If the anterior fontanelle is open in an infant, the simplest evaluation for macrocephaly is a head ultrasound.
- Although crossing two major percentile lines on a growth curve should be concerning, it is reassuring if the patient is otherwise acting normally, has a normal neurologic exam, and has been meeting their developmental milestones. An evaluation should be done, but should not cause panic.
- Genetic testing can be considered in cases of macrocephaly if imaging does not reveal any abnormalities and concerns persist.

Mohd Terbi

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Research Concepts:

Macrocephaly




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Question 895: A 9-year-old child has been wetting the bed for the past few years. He has tried the bell and pad method and desmopressin with no resolution. Which of the following medication is used to treat this condition in children?

Choices:

1. Imipramine
2. Nortriptyline
3. Amitriptyline
4. Butriptyline

Moh'd Terbi

Answer: 1 - Imipramine

Explanations:

- Imipramine 1 hour before bedtime reduces childhood enuresis.
- However, imipramine can be toxic in larger doses. It needs to be kept away from young children who might misuse it.
- Buzzer alarms are an alternative method of treating childhood nocturnal enuresis.
- Anti-diuretic hormone supplementation, desmopressin at night, is another drug therapy for nocturnal enuresis.

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Research Concepts:

Moh'd Terbi

Enuresis




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Question 896: A father brings his 3-month-old male to the clinic with complaints of lack of weight gain, lethargy, stunted growth, and poor feeding since birth. The mother is bipolar, and she continued taking lithium during pregnancy. The thyroid function test showed a thyroid-stimulating hormone level of 41 mU/L and significantly decreased T3 levels. A thyroid uptake and scan showed increased uptake of radioactive tracer. What is the reason for this increase?

Choices:

1. Abnormal iodine uptake by the thyroid gland
2. Decreased secretion of thyroid hormones
3. Increased secretion of thyroid hormones
4. Abnormal synthesis of thyroid hormones

Moh'd Terbi

Answer: 4 - Abnormal synthesis of thyroid hormones

Explanations:

- Due to the mother taking lithium throughout pregnancy, there was a decreased uptake of iodine interfering with thyroid synthesis and secretion.
- The clinical features of the newborn, thyroid function tests, as well as the mother's history, make congenital hypothyroidism the most probable diagnosis.
- Increased uptake of radioactive tracer in suspected congenital hypothyroidism is due to abnormal synthesis of thyroid hormones.
- Congenital hypothyroidism is not due to increased secretion of thyroid hormones, decreased secretion of thyroid hormones, or abnormal iodine uptake by the thyroid gland.

Mohud Terbi

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Research Concepts:

Thyroid Uptake and Scan




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Question 897: A 17-year-old previously healthy male presents to the emergency department for evaluation of 2 to 3 weeks of progressive throat pain. He was first evaluated ten days before in his primary care provider's office. Strep and Mono testing at that time were negative. Vitals are notable for a pulse of 90 bpm, blood pressure 115/70 mmHg, respiratory rate of 15/minute, and oxygen saturation of 100% on room air. He is in no acute distress. The physical exam shows right lateral neck swelling. Workup includes laboratory testing, chest x-ray, and a CT angiogram of the neck. Results include a leukocytosis of 15,000 with a left shift, but normal hemoglobin, hematocrit, and platelet count. A chest x-ray is normal. CT angiogram shows thrombophlebitis of the right internal jugular vein without abscess formation. What is the next most important step in this patient's management?

Choices:

Moh'd Terbi

1. Anticoagulation with heparin
2. Intravenous antibiotics directed against the most likely pathogen
3. Consultation with interventional radiology for clot removal
4. Intravenous fluid resuscitation

Answer: 2 - Intravenous antibiotics directed against the most likely pathogen

Explanations:

- The patient presents with uncomplicated Lemierre syndrome. The most important initial step in management is intravenous antibiotics. Beta-lactamase resistant cephalosporins are generally considered the first line.
- Uncomplicated Lemierre syndrome usually responds to intravenous antibiotics and good supportive care. Anticoagulation should only be used in cases where thrombophlebitis extends intracranially, for bilateral internal jugular vein thrombosis, for extensive septic emboli burden, or for patients that fail to improve on antibiotics alone.
- The most frequent site of septic emboli in the lungs, which can be diagnosed by a chest x-ray.
- Good supportive care is important in Lemierre syndrome, as many of these patients will present with sepsis and initially require intensive care unit admission.

Mohit Tehri

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Research Concepts:

Lemierre Syndrome




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Question 898: An 18-hour-old male infant was referred to the neonatal intensive care unit due to seizure activity. The patient was born at 39-weeks gestation via cesarean 3 hours after the rupture of membranes. The delivery was complicated by a prolapsed umbilical cord and non-reassuring fetal decelerations. After delivery, the APGAR score was 7 at one minute and 9 at 5 minutes. His 28-year-old mother, had a history of previous intrauterine death, had not undergone regular prenatal visits, but reports the pregnancy was otherwise uncomplicated. Several hours after birth, he started to have multiple episodes of seizures manifested by repetitive blinking, smacking lip movements, and left-sided twitching of the left hand. Upon presentation, the patient was afebrile, with a heart rate of 144 beats per minute, respiratory rate of 40, and blood pressure of 72/30 mm Hg. The neurologic and cardiorespiratory examination was otherwise normal. The mother did not have a maternal fever, and bedside glucose, complete blood count, and electrolytes studies sent were within normal limits. Which of the following is the most likely etiology of this patient's seizures?

Mohamed Terbi

Choices:

1. Perinatal asphyxia
2. Neonatal meningitis
3. Benign neonatal seizure
4. Hemolytic disease of the newborn due to maternal Rhesus (Rh) D alloimmunization

Answer: 1 - Perinatal asphyxia

Explanations:

- When a neonate presents with seizure activity, a thorough history, and physical examination is necessary to determine if the underlying etiology is correctable.
- The most common cause of neonatal seizures is hypoxic-ischemic encephalopathy.
- A neonate that presents with seizures shortly after birth likely experienced perinatal asphyxia. This patient was at risk for this due to the presence of a prolapsed umbilical cord (an obstetric emergency) and non-reassuring fetal heart rate tracings.
- When a neonate presents with seizures, bacterial meningitis (and/or sepsis) should be an early consideration, and thus, the patient should be treated empirically with antimicrobials. It is not the most common cause. Benign neonatal seizures are diagnoses of exclusion. Therefore a full diagnostic workup should be initiated before considering this condition. Due to the previous history of fetal demise, hemolytic disease of the fetus and newborn due to maternal Rhesus (Rh) D alloimmunization is a possibility, but seizures are not an early common presentation (the typical presentation is often clinical sequelae associated with symptomatic anemia and hyperbilirubinemia).

Mehmet Tekin

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Research Concepts:

Neonatal Seizure



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Moh'd Terbi

Question 899: A 5-year-old male patient presents for frequent recurrent enterococcal and staphylococcal infections. In the patient's story, it was learned that watery diarrhea started when she was 18 months old, and she was diagnosed with type 1 diabetes mellitus when she was three years old. The patient who developed Hashimoto thyroiditis at the age of 4, had recurrent hospitalizations due to Enterococcus and Staphylococcus aureus infections during these five years. What is the most likely diagnosis of the patient?

Choices:

1. X-linked severe combined immunodeficiency (X-SCID)
2. X-linked agammaglobulinemia (XLA)
3. X-linked lymphoproliferative syndrome
4. Immune dysregulation, polyendocrinopathy, enteropathy, X-linked

Moh'd Terbi

Answer: 4 - Immune dysregulation, polyendocrinopathy, enteropathy, X-linked

Explanations:

- IPEX (immune dysregulation, polyendocrinopathy, enteropathy, X-linked) syndrome is characterized by systemic autoimmunity, typically beginning in the first year of life. Presentation is most commonly the clinical triad of watery diarrhea, endocrinopathy (most commonly insulin-dependent diabetes mellitus), and eczematous dermatitis. Most children have other autoimmune phenomena, including cytopenias, autoimmune hepatitis, or nephropathy; lymphadenopathy, splenomegaly, alopecia, arthritis, and lung disease related to immune dysregulation have all been observed.
- IPEX (immune dysregulation, polyendocrinopathy, enteropathy, X-linked) syndrome occurs as a result of a mutation in the FOXP3 transcription factor.
- IPEX (immune dysregulation, polyendocrinopathy, enteropathy, X-linked) syndrome is required to be regarded in the entire male patients with chronic persistent diarrhea, growth retardation, and/or infantile-onset type 1 diabetes mellitus.
- The definitive diagnosis in patients suspected to be with IPEX (immune dysregulation, polyendocrinopathy, enteropathy, X-linked) syndrome is ensured by the mutation analysis of the FOXP3 gene. Bone marrow transplantation (BMT) offers the only potential cure for IPEX syndrome.

Mohamed Tarek

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Research Concepts:

X-Linked Immunodeficiency

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Moh'd Terbi

Question 900: A 7-year-old child is seen in the emergency department with several fractures of his arms and legs despite minimal trauma. Closer examination reveals that he has a blue sclera. In addition, he also has ligament laxity and increased joint mobility, short stature, and easy bruising. The parents also complain of gradual hearing loss in their child. The examination of his mouth reveals normal enamel with dentin abnormality. The chief reason for his pathology is linked to which of the following?

Choices:

1. Defective fibrillin gene
2. A defect in type 1 collagen
3. Lack of vitamin C
4. Absence of melanin

Moh'd Terbi

Answer: 2 - A defect in type 1 collagen

Explanations:

- Osteogenesis imperfecta (OI) is an autosomal dominant defect and presents with blue sclera and a tendency to develop fractures.
- Osteogenesis imperfecta is a disorder of bone fragility caused by mutations in the COL1A2 and COL1A genes that are responsible for encoding type I procollagen.
- About 50% of patients with OI will have hearing loss by the fourth decade of life.
- The sclera may be white or blue. Blue sclera are also known to occur in Menkes syndrome, cleidocranial dysplasia, progeria, cleidocranial dysplasia, Cheney syndrome, and cutis laxa.

Mahdi Terbi

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Research Concepts:

Osteogenesis Imperfecta




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Section 10

Question 901: A newborn male presents with a difficulty of breathing right after normal spontaneous delivery. He was born at 32 weeks age of gestation due to preterm labor and weighs 1400 grams. It was noticed that he was cyanotic, grunting, and tachypneic. The APGAR scores are 7 and 8 at 1 and 5 minutes. The vital signs show a temperature of 36.5 C (97.7 F), cardiac rate 140/min, and a respiratory rate of 70 breaths/min. The physical exam shows cyanotic lips, nasal flaring, intercostal and subcostal retractions, decreased breath sounds, and crackles on both lung fields. The patient was hooked to CPAP. The arterial blood gas shows a pH of 7.2, PCO2 50 mmHg, HCO3 24 mmol/L, and PaO2 of 70 mmHg. Which of the following chest x-ray findings would you expect to see in this patient?

Mohʼd Terkl

Choices:

1. Increased heart size with decreased pulmonary vascular marking
2. Streaky pulmonary interstitial marking and overinflation
3. Cystic lucencies
4. Diffuse ground-glass reticulogranular appearance with air bronchograms and diffuse atelectasis

Answer: 4 - Diffuse ground-glass reticulogranular appearance with air bronchograms and diffuse atelectasis

Explanations:

- Respiratory distress of the newborn is caused by a deficiency in surfactant and causes symptoms of respiratory distress that present within hours after birth, most often immediately after delivery.
- The symptoms include tachypnea, substernal and suprasternal retractions, nasal flaring, grunting, and cyanosis. Breath sounds may be decreased, and peripheral pulses may also be diminished.
- Chest radiography will show diffuse atelectasis, classically described as having a ground-glass reticulogranular appearance with air bronchograms, as well as low lung volumes.
- Infants with cyanotic congenital heart disease may have similar symptoms clinically, but will not have the diffuse reticulogranular ground glass appearance on chest radiography. Transient tachypnea of the newborn will show perihilar streaking, representing perihilar interstitial edema on chest radiography. Cystic lucencies on chest x-ray can be seen in patients with pulmonary interstitial emphysema.

Mona Tehrani

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Research Concepts:

Neonatal Respiratory Distress Syndrome



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Moh'd Terbi

Question 902: A 35-year-old woman presents with sensitivity to hot, spicy, and sour foods. She has no significant past medical history or allergies. Physical examination reveals erythematous, atrophic, irregular patches with loss of filiform papillae on the lateral and dorsal aspects of her tongue and hard palate. Which of the following medications has been associated with the pathogenesis of this condition?

Choices:

1. Oral contraceptive pills
2. Inhaled steroids
3. Cyclosporine
4. Oral nonsteroidal anti-inflammatory drugs (NSAIDs)

Moh'd Terbi

Answer: 1 - Oral contraceptive pills

Explanations:

- This patient likely has geographic tongue, also called benign migratory glossitis. Signs of a geographic tongue include migratory, waxing and waning, irregular, smooth, red patches on the tongue. Some patients experience burning or irritation of the tongue, particularly when eating hot or spicy foods.
- Oral contraceptive pills have been associated with the pathogenesis of geographic tongue, indicating a possible hormonal role in the development of this disorder.
- Deficiencies of vitamins D, B6, and B12, folic acid, iron, and zinc may play a role in the pathogenesis of geographic tongue.
- NSAIDs, topical corticosteroids, and cyclosporine may be useful in the management of a geographic tongue but have not been implicated in its pathogenesis.

Hon'd Terbi

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Research Concepts:

Geographic Tongue




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Question 903:

A 16-year-old boy from a Connecticut boarding school is brought to the hospital with left knee swelling that started 3 days ago. He denies any history of trauma. The patient reports that he feels like there is a lot of pressure inside his left knee, and it is going to “pop” from the pressure. He denies any fever or chills. Vital signs include blood pressure 105/70 mmHg, heart rate 99/min, and temperature 37.9 C (100.2 F). On physical examination, he is alert and fully cooperative, with a significantly swollen and warm left knee. He reports discomfort with passive motion and walks with a limp. Bilateral knee radiographs are negative. Serum leukocytes count is 11,000/microL, ESR 37 mm/h, and CRP 2.8 mg/L. Borelli burgdorferi IgG and IgM are both positive. What is the most appropriate next best step in the management of this patient?

Choices:

1. Oral doxycycline for 28 days
2. Arthrocentesis only
3. Arthrocentesis and oral amoxicillin for 28 days
4. Intravenous ceftriaxone for 14 days

Moh'd Terbi

Answer: 1 - Oral doxycycline for 28 days

Explanations:

- For children presenting with painful swollen unilateral knee pain, septic arthritis, transient synovitis, juvenile idiopathic arthritis, and, for patients from the endemic area, Lyme arthritis is the top differential diagnosis. For patients with Lyme arthritis, one should bear in mind the possible concurrent Lyme carditis and Lyme meningitis.
- A complete 28-day course of oral amoxicillin or cefuroxime (for children younger than 8 years old) or doxycycline (for children older than 8 years old) are the preferred lines of management for Lyme arthritis without concurrent cardiac or neurologic complications. The majority of patients improve within a few months after antibiotics.
- Intravenous ceftriaxone for 14 to 28 days indicated if symptoms worsen despite an appropriate course of oral antibiotics.
- Arthrocentesis may be cautiously deferred in Lyme-endemic areas in children 2 years or older with unilateral knee swelling, no history of fever, no pain with short arc motion, C-reactive protein 4.0 mg/L, or an erythrocyte sedimentation rate 40 mm/h with an absolute neutrophil count 10000 cells/microL. Culture or immunologic studies of synovial fluid have low yield and are not recommended for the diagnosis of Lyme arthritis.

Mohit Tariq

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Research Concepts:

Arthritis

StatPearls Knowledge Base

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Moh'd Terbi

Question 904: A 20-month-old girl has been brought to the clinic by her mother due to left-sided weakness. The mother also reports developmental delay. There is no history of prenatal or postnatal infections or injuries. Her neurological examination is consistent with left-sided hemiparesis. Magnetic resonance imaging (MRI) brain has been ordered by a pediatric neurologist, and it shows a cleft and cerebrospinal fluid (CSF) between the ventricular cavity and subarachnoid space. What is the most likely genetic mutation involved in this condition?

Choices:

1. PMP22 mutations
2. CACNA1C mutations
3. SCN1A mutations
4. COL4A1 mutations

Moh'd Terbi

Answer: 4 - COL4A1 mutations

Explanations:

- MRI finding of a cleft and CSF between the ventricular cavity and subarachnoid space is consistent with schizencephaly.
- Genetic mutations in COL4A1, EMX2, SHH, and SIX3 genes have been described in some cases of schizencephaly.
- Other potential causes include prenatal teratogenic exposures such as alcohol, warfarin, or cocaine, prenatal viral infections like CMV infection, and intrauterine fetal stroke.
- Schizencephaly results from abnormal neuronal migration during the first few weeks of gestation.

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Moh'd Terbi

Research Concepts:

Schizencephaly




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Question 905: A 7-year-old male presents with symptoms of cough, shortness of breath, and hemoptysis. He has had repeated iron transfusions in the past for iron deficiency anemia but still remains anemic. His chest computed tomography scan shows diffuse alveolar shadowing. He undergoes a broncho-alveolar lavage, and the fluid analysis shows hemosiderin-laden macrophages. All other tests are normal, and there is no known cause for his symptoms despite thorough investigation. There is no significant past medical history. He is allergic to penicillins and corticosteroids. What medication can be used in treating this patient?

Choices:

1. Long term oral iron therapy
2. Inhaled bronchodilators
3. Azathioprine
4. Interferon gamma

Moh'd Terbi

Answer: 3 - Azathioprine

Explanations:

- The most likely diagnosis in this patient is idiopathic pulmonary hemosiderosis, a type of idiopathic pulmonary hemorrhage. Idiopathic pulmonary hemosiderosis is a condition manifested by recurrent pulmonary hemorrhage of idiopathic etiology, diffuse radiologic abnormalities, symptoms including cough, hemoptysis, and moderate to severe hypochromic anemia.
- Corticosteroids are the first line of treatment. However, when steroids are not tolerated or contraindicated, second-line therapies include other immunosuppressants such as azathioprine, hydroxychloroquine, methotrexate, and cyclophosphamide.
- There is no standard universal dose of steroids. However, doses of 2mg/kg/day have been used in children with good outcomes. Some have also used 1mg/kg/day in adults. Similarly, there is no universal dose for second-line therapies. However, the most important factor should be to monitor for side effects and taper down as tolerated.
- The duration of treatment with any therapy is not known. However, many clinicians continue treatment for a long time until alveolar shadowing has resolved appreciably on chest imaging. Recurrence is common, even after long term treatment.

Mon'o Terh

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Research Concepts:

Idiopathic Pulmonary Hemorrhage

StatPearls Knowledge Base

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Moh'd Terbi

Question 906: A 17-year-old boy presents to the clinic with complaints of vomiting and dizziness since yesterday. He also complains of multiple episodes of diarrhea. The travel history is insignificant except for a visit to the countryside two days ago where he had smoked chicken for lunch. On presentation, he has a pulse rate of 84 beats per minute, a blood pressure of 90/70 mmHg, a respiratory rate of 17 breaths/min, and he is afebrile. The physical examination does not reveal any significant findings. He has a Hb level of 11.5 g/dl, a TLC of 9500/mm3, and a platelet count of 365,000/mm3. A stool specimen sent for microscopic evaluation reveals seagull-shaped motile gram-negative rods. Which of the following would have the most significant role in the initial management of this patient?

Choices:

Mehdi Terbi

1. Hydration with fluids and electrolytes
2. Antibiotic therapy with amoxicillin
3. Antibiotic therapy with trimethoprim-sulfamethoxazole
4. Treatment with loperamide

Answer: 1 - Hydration with fluids and electrolytes

Explanations:

- Replacement of fluids and electrolytes is the cornerstone of therapy in mild Campylobacter infections.
- Oral hydration can be supplemented with the administration of intravenous fluids depending upon the disease severity.
- Usually, infection with Campylobacter resolves on its own in 2 days to 10 days, and adequate replacement of fluid and electrolyte losses might be the only intervention that is needed.
- The use of antibiotics is reserved for high-risk patients such as the immunocompromised and the elderly. Those with a more severe disease such as fever, bloody stools, or severe abdominal pain may also warrant antibiotics. The antibiotics used include oral azithromycin (1 g, single dose) or oral ciprofloxacin (500 mg, twice daily for five days). Anti-motility agents should be avoided as they can impede the resolution of the infection. Differentiating Campylobacter from Vibrio cholera is done by culture. Campylobacter is "seagull shaped," while Vibrio is straight-to-curved.

Mehdi Terbi

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Research Concepts:

Campylobacter




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improvement.

Moh'd Terbi

Question 907: A 1-week-old neonate presents to the medical genetics clinic having been born with atypical facies and found to be below the 5th percentile for height and weight despite uncomplicated term birth. The immediate postoperative course was complicated by idiopathic hypercalcemia, and subsequent genetic testing revealed multiple gene deletions on chromosome 7. Which of the following cardiac abnormalities is associated with this patient's condition?

Choices:

1. Aortic stenosis
2. Supravalvular aortic stenosis
3. Pulmonic stenosis
4. Ventricular septal defect

Moh'd Terbi

Answer: 2 - Supravalvular aortic stenosis

Explanations:

- Williams syndrome (WS) is a rare genetic and neurodevelopmental disorder. WS often presents at birth when the child is discovered to have supravalvular aortic stenosis (SVAS).
- SVAS is a congenital heart defect that accounts for 8 to 14 percent of all cases of congenital aortic stenosis. It involves a narrowing of the portion of the aorta located just above the aortic valve.
- Physical findings are very similar such as aortic valve stenosis with exceptions such as accentuation of aortic valve closure, an absent ejection click, and absence of transmission of a thrill and murmur into the jugular notch and along the carotid vessels.
- Another classical finding of SVAS is that systolic pressure in the right arm is usually higher than that in the left arm. This pulse disparity may be related to the tendency of a jet stream to adhere to a vessel wall and selective streaming of blood into the innominate artery.

Mehmet Terki

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Research Concepts:

Williams Syndrome




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improvement.

Moh'd Terbi

Question 908: A newly delivered neonate presents for further evaluation after a lesion was seen on the patient's lower back. The patient seems restless but is otherwise unremarkable. After interviewing the mother, it is determined that she did not receive prenatal counseling or have regular check-ups throughout her pregnancy. The physical exam is only notable for a sac of fluid on the patient's lower back and mildly prominent head circumference. The laboratory values were unremarkable. MRI imaging is notable for a small posterior fossa. The diagnosis is made. What treatment is required for the genitourinary pathology that typically develops from this back lesion?

Choices:

1. Intermittent bladder catheterization
2. Suprapubic catheterization
3. Percutaneous nephrostomy
4. Continuous bladder drainage

Moh'd Terbi

Answer: 1 - Intermittent bladder catheterization

Explanations:

- In patients with myelomeningocele, nearly all will have a neurogenic bladder.
- This typically requires intermittent catheterization to decrease the risk of renal disease.
- A patient with myelomeningocele may also present with lower-limb paralysis and sensory loss.
- When a child is found to have myelomeningocele at birth, most (~95%) are associated with Chiari II malformation.

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Moh'd Terbi

Research Concepts:

Chiari II Malformation




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Question 909: A 7-year-old girl presents because the mother is concerned that the daughter seems more obese than her peers at her age. The physician calculates her BMI to be above the 95th percentile. According to her mother, the daughter is physically active (at least 60 minutes of moderate physical activity every day) and is not a picky eater and eats whatever that is available in the house. Her favorite snack is a fruity juice. When the provider asks what type of food that the mother and father like to eat, the mother responds that they mostly eat pre-packaged meals since both of them work full-time and don't have time to cook meals after work. The mother adds that they both have a BMI of >30. Which of the following correctly explains the cause of the daughter's obesity?

Choices:

1. The genetic component is the most contributing factor to the daughter's obesity
2. The food choices of the parents play a big role in the development of their child's obesity
3. Not performing 90 minutes of vigorous physical activity daily is one of the contributing factors to her obesity
4. Drinking fruit juices is not a contributing factor to the daughter's obesity because fruit juices help supplement nutrients that are normally obtained from fruits

Mohd Terki

Answer: 2 - The food choices of the parents play a big role in the development of their child's obesity

Explanations:

- The types of foods that parents like to eat and choose play a tremendous role in the types of food that their children consume.
- The type of snacks that the parents purchase for their family, and that is available in the house can affect the foods that their children consume. Fruit juices contain high sugar, and pre-packaged foods often contain high calories that can contribute to the daughter's obesity.
- When both parents are overweight, their children have an approximately 80% chance of becoming obese. Genetics is not the major cause which only accounts for less than 5 percent of childhood obesity. The environmental or behavior factors shaped by parents contribute more to the change of developing childhood obesity.
- According to the American Heart Association, children aged two and older should have a balanced diet with physical activity. Because the daughter is physically active and spends at least 60 minutes doing moderate physical activity every day, it is likely that the foods that she consumes are contributing to her obesity.

Mon'd Terih

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Research Concepts:

Pediatric Obesity Nutritional Guidelines



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Moh'd Terbi

Question 910: A 17-year-old male presents with neurologic complaints after returning from a camping trip ten days ago. During the exam, the healthcare provider finds and removes a tick from his scalp. Which of the following is most likely to be his neurologic presentation?

Choices:

1. Descending motor weakness
2. Autonomic instability
3. Focal sensory loss
4. Ataxia

Moh'd Terbi

Answer: 4 - Ataxia

Explanations:

- Tick paralysis often closely resembles Guillain-Barre syndrome in that paralysis is ascending, and deep tendon reflexes are characteristically absent.
- Tick paralysis typically presents with ataxia or ascending paralysis.
- While patients with tick paralysis may complain of paresthesias, the sensory exam is usually normal.
- Autonomic instability has been reported but is not common. Fever and other constitutional symptoms are usually absent.

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Moh'd Terbi

Research Concepts:

Tick Paralysis




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Question 911: A 16-year-old girl presented to the hospital with a history of headache, fever, and malaise for two days, and impaired sensorium for the past 6 hours. She has a history of an upper respiratory tract infection two weeks ago. Her blood pressure is 110/72 mmHg, with a pulse rate of 92/min. Glasgow coma scale (GCS) score is 9 with no meningeal signs. Magnetic resonance imaging (MRI) reveals multiple large asymmetrical hyperintensities in the frontoparietal and occipital subcortical and deep white matter of the brain along with hyperintensities in the spinal cord in T2 weighted and fluid-attenuated inversion recovery (FLAIR) sequences. Which of the following is the most likely diagnosis?

Choices:

1. Multiple sclerosis (MS)
2. Meningitis
3. Acute disseminated encephalomyelitis (ADEM)
4. Brain abscess

Med'd Terbi

Answer: 3 - Acute disseminated encephalomyelitis (ADEM)

Explanations:

- Acute disseminated encephalomyelitis (ADEM) is an immune-mediated demyelinating lesion that usually presents in children in the first or second decade.
- It is usually preceded by infection or immunization.
- MRI can show multiple widespread asymmetric hyperintense lesions in the brain and spinal cord on T2-weighted and FLAIR sequences.
- Lesions of ADEM can be differentiated from multiple sclerosis (MS) as ADEM lesions are often large with ill-defined borders and less likely to involve the periventricular area and corpus callosum.

Mohd Terbi

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Research Concepts:

White Matter Lesions




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Question 912: A 7-month-old male presents to the emergency department with respiratory distress. An echocardiogram reveals an anomalous origin of the left pulmonary artery from the right pulmonary artery between the trachea and the esophagus. On a computerized tomography scan, what portion of the airway would be expected to be compressed by the abnormal course of the left pulmonary artery?

Choices:

1. Proximal trachea
2. Bronchus intermedius
3. Distal trachea and right mainstem bronchus
4. Left lower lobe bronchus

Moh'd Terbi

Answer: 3 - Distal trachea and right mainstem bronchus

Explanations:

- A pulmonary artery sling is a vascular anomaly of the anomalous origin of the left pulmonary artery from the right pulmonary artery.
- As the left pulmonary artery courses to supply the left lung, it goes posterior to the trachea and anterior to the esophagus.
- As the left pulmonary artery courses to supply the left lung, it compresses the distal trachea and right mainstem bronchus.
- It is necessary to perform a bronchoscopy pre-operatively to evaluate for tracheal stenosis. In over 50% of patients with pulmonary artery sling, tracheal resection will also have to be performed simultaneously.

Mohd Terbi

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Research Concepts:

Pulmonary Artery Sling




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Question 913: An 11-year-old girl presents to the office with a sore throat for the last day. She has a fever of 103 F, fatigue, and some nausea but no congestion and no cough. The clinician feels tender anterior cervical lymph nodes and sees exudates on her swollen tonsils, but a rapid strep swab is negative. What is the most appropriate next step in care?

Choices:

1. Weight-based dosing of liquid ibuprofen
2. Weight-based dosing of clindamycin for a five-day treatment
3. Empiric treatment with oseltamivir
4. Collect a bacterial culture of the throat

Moh'd Terbi

Answer: 4 - Collect a bacterial culture of the throat

Explanations:

- The rapid strep test has a sensitivity of 83-88% and a specificity of 94-96%, which makes it effective at confirming a likely diagnosis but unreliable for ruling it out. When clinical context makes an infection possible, a culture should be used to confirm a negative point of care test.
- Patients with all the key elements (Centor criteria) of bacterial pharyngitis still only have just over a 50% probability of having the infection, so the infectious diseases society of America (IDSA) guidelines recommend confirming the infection before treating with antibiotics.
- When tests like bacterial cultures delay a definitive diagnosis, strategies like providing pocket prescriptions provide patients with access to care without requiring additional office visits and delays.
- Clindamycin could be an appropriate third-line treatment for streptococcal pharyngitis for a patient with severe penicillin allergies, but its taste and potential side effects mean it should be avoided otherwise, especially for children.

Moh'd Terkis

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Research Concepts:

Bacterial Pharyngitis



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Moh'd Terbi

Question 914: A 16-year-old male patient came to the emergency department following a motor vehicle accident. Vital signs are as follows: BP:125/83 mmHg, temperature: normal, RR: 23/minute, and HR: 87/minute, regular. He is conscious. His extremities are pink and warm. Which of the following are the most important assessments for the patient?

Choices:

1. Capillary refilling, systolic blood pressure, and eye-opening
2. Respiratory rate, capillary refilling, and motor response
3. Systolic blood pressure, respiratory rate, and motor response
4. Eye-opening, capillary refilling, and motor response

Moh'd Terbi

Answer: 3 - Systolic blood pressure, respiratory rate, and motor response

Explanations:

- Glasgow coma scale is included in both the trauma and revised trauma scores. The scale is composed of three tests: eye, verbal, and motor responses.
- The capillary refill was removed due to feedback from first responders who struggled to observe capillary refill in dark settings or at night.
- Systolic blood pressure was added to the trauma score (and kept in the revised trauma score) after it was found it increased attending physicians' suitability of the instrument to assist in triaging injured patients.
- Respiratory rate was added to the trauma score (and kept in the revised trauma score) after they found it increased attending physicians' suitability of the instrument to assist in triaging injured patients.

Mehdi Terbi

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Research Concepts:

Revised Trauma Scale




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Question 915:

A 15-year-old boy is brought to the emergency department after a sudden onset of weakness in his upper and lower limbs. He was normal a few hours back while he was practicing football for the upcoming tournament. He is fully conscious and denies any trauma during practice. He does not have difficulty swallowing, and his vision is intact. This is the first time he ever developed this muscle weakness. He does not have any other illness or recalls no recent illness. His father also has a history of attacks of sudden muscle weakness in both limbs, which resolve spontaneously. The patient's vital signs are within normal limits. Cardiovascular, respiratory, and gastrointestinal examinations reveal no abnormality. Neurological examination shows a generalized decrease in muscle strength, depressed deep tendon reflexes, with intact touch, pain, pressure, proprioception, and temperature sensation. Laboratory work reveals sodium 142 mEq/L, potassium 1.9 mEq/L, serum urea nitrogen 18 mg/dL, creatinine 0.8 mg/dL, chloride 110 mEq/L, bicarbonate 26 mEq/L, and creatine kinase 1135 U/L. What is the most likely mechanism of the muscle weakness in this patient?

Mohamed Terbi

Choices:

1. Traumatic cervical cord transection
2. Skeletal muscle ion channel mutation
3. Autoantibodies against acetylcholine receptors
4. Autoimmune demyelination of peripheral nerves

Answer: 2 - Skeletal muscle ion channel mutation

Explanations:

- Sudden onset of generalized flaccid paralysis in a young male patient with a positive history of similar episodes in a family with hypotonia and depressed deep tendon reflexes without changes in the sensation in the setting of hypokalemia strongly leads to suspicion of the hypokalemic periodic paralysis.
- Skeletal muscle ion channel mutation, more commonly calcium channel and less commonly sodium channel, is the mechanism behind the muscle weakness in hypokalemic periodic paralysis.
- Calcium and sodium channel mutations make skeletal muscle cell membrane resting membrane potential unstable, and the hypokalemia precipitates the flaccid paralysis in patients with hypokalemic periodic paralysis.
- Absence of trauma and intact sensation rules out the cervical cord transection. The autoantibodies against the acetylcholine receptors are absent in hypokalemic periodic paralysis. The autoantibodies against the acetylcholine receptors are present in myasthenia gravis. The mechanism in hypokalemic period paralysis is familial and the skeletal muscle ion channel mutation, not the autoimmune attack against the peripheral nerves. Peripheral nerves are not involved in hypokalemic periodic paralysis.

Wen-ya Terbi

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Research Concepts:

Hypokalemic Periodic Paralysis

StatPearls Knowledge Base

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Moh'd Terbi

Question 916: A car pulls up to the emergency department entrance, and several teenagers rush in, asking for help. The staff pulls a somnolent 16-year-old girl from the back seat and brings her into the resuscitation room. The patient sent a text message to her friends, stating that she was depressed about a bad breakup and had taken an overdose to "end the pain." Her companions don't know much about her health history, but one mentions that she has "Tetralogy or something like that" and had surgery as a baby. She believes that she only takes one medication, "a heart pill." Her EKG reveals bradycardia and a first-degree heart block. Also, her blood glucose is 368 mg/dL. Her cardiac problem quickly escalates to a 2nd and then a 3rd-degree heart block. Having astutely decided what the likely offending agent is, what are the probable treatment options?

Choices:

Mehdi Terbi

1. Glucagon, vasopressors, cardiac pacing
2. Sodium bicarbonate, intralipid, urine alkalinization
3. High dose insulin, intralipid, IV calcium, atropine, vasopressors, methylene blue, ECMO
4. Sodium bicarbonate, benzodiazepines, ECMO

Answer: 3 - High dose insulin, intralipid, IV calcium, atropine, vasopressors, methylene blue, ECMO

Explanations:

- This patient has Tetralogy of Fallot and was placed on calcium channel blockers (CCBs) due to potential rhythm disturbances after the surgery. She overdosed on this medication and already exhibited toxicity when she was found.
- CCBs interfere with insulin secretion which leads to hyperglycemia. Hemodynamic effects are bradycardia, hypotension, and eventual cardiovascular collapse.
- This often fatal ingestion requires prompt, aggressive, and multimodal treatment, much of which can have minimal effect in massive intakes. Vasopressors and ECMO are often lifesaving in these extreme cases.
- Glucagon, vasopressors, and cardiac pacing would be most appropriate for a beta-blocker overdose. Beta-blockers also interfere with gluconeogenesis, usually leading to hypoglycemia. This patient has hyperglycemia. Sodium bicarbonate, intralipid, urine alkalinization would be most appropriate for an overdose of tricyclic antidepressants (TCAs). TCAs typically cause tachycardia followed by QRS prolongation and right axis deviation. Sodium bicarbonate, benzodiazepines, and ECMO would be most appropriate for an overdose of antimalarial drugs.

Mona Terbi

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Research Concepts:

Deadly Single Dose Agents

StatPearls Knowledge Base

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Moh'd Terbi

Question 917: A 1-year-old girl is brought in by her parents for a well-child check-up. She has no past medical history. The mother reports no abnormalities. All her vital signs are within normal limits. On neurological examination, the lateral plantar surface is stroked from the heel to the toes and then towards the big toe. As a result of this stimulus, the big toe bends up and back toward the top of the foot and the other four toes spread out from one another. Up to which of the following ages is this result normal?

Choices:

1. 1 year
2. 2 years
3. 3 years
4. 4 years

Moh'd Terbi

Answer: 2 - 2 years

Explanations:

- The examiner in the clinical scenario is performing the Babinski reflex.
- It is prompted by stroking the lateral plantar surface from the heel to the toes and then towards the big toe. To this stimulus, there is the fanning of the big toe.
- This response is normal in the infant up to 2 years of age.
- In adults, a positive Babinski sign suggests an upper motor neuron disease.

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Moh'd Terbi

Research Concepts:

Child Development




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Question 918: A 16-year-old female presents with vaginal discharge. Her condition started a month ago and is associated with dysuria and vaginal bleeding between menstrual periods. She had similar symptoms in the past and was given treatment. She is in a non-monogamous relationship and usually does not use any barrier methods during sexual intercourse. She says that one of her partners complained that he had a greenish penile discharge and pain on urination two weeks ago. The vital signs show a blood pressure of 110/60 mmHg, a temperature of 37.5 C (99.5 F), a cardiac rate of 80/min, and a respiratory rate of 22/min. The pelvic exam shows mucopurulent vaginal discharge and cervical motion tenderness. An endocervical culture was done, but the results are pending. Which of the following is the drug of choice for treating this patient's condition?

Choices:

Moh'd Terbi

1. Azithromycin and doxycycline
2. Ceftriaxone and doxycycline
3. Metronidazole
4. Penicillin G

Answer: 2 - Ceftriaxone and doxycycline

Explanations:

- Gonorrhea is the second most commonly reported communicable disease.
- Females infected with gonorrhea are usually asymptomatic, but they can have urinary symptoms, vaginal discharge, and vaginal bleeding between menstruation. Infected men are also asymptomatic but can manifest with urinary symptoms and penile discharge.
- The drug of choice for gonorrhea is ceftriaxone. Doxycycline is added if the Chlamydia status is unknown.
- Trichomoniasis is treated with metronidazole. Syphilis is treated with penicillin G.

Mohd Terbi

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Research Concepts:

Sexually Transmitted Infections




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Question 919: A mother brings her 24-month-old male child to a clinic complaining of an empty left hemiscrotum. On physical examination, the right testicle is papable in the scrotum, whereas the left testicle is papable in the left inguinal canal region. On examination of the patient in warm water, the left testicle becomes papable in the scrotum. What is the next best step in the management of this patient?

Choices:

1. Perform orchiectomy
2. Perform orchidopexy
3. Start human chorionic gonadotropin (HCG)
4. Reassurance

Moh'd Terbi

Answer: 4 - Reassurance

Explanations:

- A common diagnostic challenge is distinguishing a retractile testicle from a testicle that is not spontaneously descending into the scrotum. Retractile testes are more common than undescended testes and do not require surgical correction.
- In normal males, as the cremaster muscle contracts, the testicles retract into the upper scrotum and inguinal canal. This reflex is more active in infants.
- A retractile testicle high in the scrotum is challenging to distinguish from one positioned in the lower inguinal canal. Maneuvers used to assist identification include the cross-legged position, soaping the clinician's fingers, and examining the patient in a warm bath.
- For retractile testes, a yearly physical examination is recommended because of the 2% to 50% reported the risk of a retractile testis becoming an acquired undescended testis.

Mahdi Terbi

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Research Concepts:

Cryptorchidism




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Question 920: An 8-year-old male presents with painful and swollen knees with bilateral knee contractures, weakness, and hypotrophy of quadriceps for over a year. He is otherwise healthy. His lab record shows negative test results for antinuclear antibody (ANA) and anti-double stranded DNA (anti-dsDNA). Intraarticular corticosteroid injections and physical therapy are recommended. What type of rash is commonly associated with the suspected diagnosis?

Choices:

1. Salmon pink rash
2. Butterfly rash
3. Discoid rash
4. Maculopapular rash

Moh'd Terbi

Answer: 1 - Salmon pink rash

Explanations:

- Juvenile idiopathic arthritis (JIA) is a heterogeneous group of idiopathic inflammatory arthritis affecting children younger than 16 years of age and lasting six weeks or longer.
- A salmon pink rash is commonly associated with JIA.
- Butterfly and discoid rash are characteristic of systemic lupus erythematosus.
- Systemic arthritis is arthritis with or preceded by a fever of at least a 2-week duration and accompanied by at least 1 of the following: evanescent erythematous rash, generalized lymph node enlargement, hepatomegaly, and/or splenomegaly, or serositis (pericarditis and/or pleuritis and/or peritonitis).

Mohd Terbi

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Research Concepts:

Juvenile Idiopathic Arthritis




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Question 921: A 9-month female child is at the office for a checkup. The mother notices that her daughter seems to be always looking downward. Her birth history was unremarkable. On physical exam, the vital signs are within normal limits, and the clinician notices an area of the thin and shiny scalp with dilated scalp veins. Also, there is a fixed downward gaze. Head circumference is 90% for age. CT showed ballooning of the third ventricle with grossly dilated lateral ventricles. Which of the following is the most rational strategy for the long-term management of the patient?

Choices:

1. Endoscopic third ventriculostomy
2. Ventriculoperitoneal shunt
3. Ventriculoatrial shunt
4. Lumbar subarachnoid drain

Moh'd Terbi

Answer: 1 - Endoscopic third ventriculostomy

Explanations:

- The patient has clinical and radiological features consistent with obstructive hydrocephalus secondary to aqueductal stenosis.
- The endoscopic third ventriculostomy is currently the ideal management strategy in the management of the child presenting with obstructive hydrocephalus from aqueductal stenosis.
- It provides a conduit for effective CSF diversion as well as obviates the risk of infection and obstruction associated with the placement of shunts.
- There is a lifelong risk of shunt failure resulting from either its obstruction or infection. Moreover, there is a need for shunt revision following the growth of the child.

Mohd Terbi

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Research Concepts:

Hydrocephalus




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Question 922: A 3-day-old boy is being evaluated after his parents alerted their nurse of increased fussiness and poor feeding. The child was born at 36 weeks via cesarian delivery as a result of maternal preeclampsia. The mother was negative for GBS and received routine prenatal care. The neonate had been feeding well until today when he refused to breastfeed. On evaluation, vital signs are significant for temperature 39.2 C, heart rate 200/min, respiratory rate 70/min, and blood pressure 60/30 mmHg. The neonate is lethargic and pale. Labs and cultures are obtained, and the neonate is given empiric antibiotics to treat the likely etiology of infection. Which of the following is the strongest risk factor for the patient's infection?

Choices:

1. Preterm birth
2. Routine prenatal care
3. Maternal preeclampsia
4. Cesarian delivery

Moh'd Terbi

Answer: 1 - Preterm birth

Explanations:

- Preterm birth, birth before 37 weeks, places neonates at an increased risk for neonatal sepsis.
- Maternal Group B streptococcal colonization, chorioamnionitis, premature or prolonged (greater than 18 hours) rupture of membranes, and preterm birth (less than 37 weeks) place neonates at an increased risk for early-onset neonatal sepsis.
- Risk factors for late-onset neonatal sepsis are prematurity, low birth weight, prolonged indwelling catheter use, invasive procedures, ventilator-associated pneumonia, and prolonged antibiotic usage.
- Routine prenatal care lowers the risk of complications associated with pregnancy.

Mohd Terbi

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Research Concepts:

Fever In A Neonate




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Question 923: A 12-year-old girl is being evaluated for short stature. She has a proportionate body. She was delivered at 39 weeks of gestation and had a birth weight of 2.5 kg. During childhood, her developmental milestones were delayed. However, she attained menarche at the age of 10 years. Her menstrual cycles were regular when she first reached menarche but had become irregular in the last 2 years. On physical examination, her height is 134.7 cm, weight 38.5 kg, and her body mass index (BMI) is calculated to be 21.2 kg/m2. Laboratory tests including complete blood count, comprehensive metabolic panel, insulin-like growth factor (IGF)-1 levels, growth hormone-releasing hormones (GHRH), and thyroid function are within normal limits. The examination also reveals webbing of the neck and cubitus valgus. What is the most likely cause of the patient's short stature?

Choices:

Mohid Terbi

1. Small for gestational age (SGA)
2. Malnutrition
3. Turner syndrome
4. Achondroplasia

Answer: 3 - Turner syndrome

Explanations:

- Stature is determined by various factors, including environmental, genetic, and nutritional. Other causes of short stature include deficiency of numerous hormones, congenital disorders, etc. A person with the congenital disorder has symptoms related to the disorder. Congenital disorders show a variety of symptoms and can be identified with the help of karyotyping. The genetic disorders associated with short stature include Down's syndrome, Turner syndrome, 3M syndrome, Noonan syndrome, Prader-Willi syndrome, Aarskog syndrome, Silver-Russell syndrome, Short stature homeobox gene deficiency, etc.
- The webbing of the neck and cubitus valgus is consistent with Turner syndrome. In this case, the physical findings of the girl are typical of Turner syndrome.
- Other common symptoms associated with Turner syndrome may include short stature, ovarian insufficiency, slowed growth, no growth spurts at expected times, irregular menstrual cycles, etc.
- The baby is said to have small for gestational age (SGA) if he/she is smaller than the normal range of gestational period. In this case, the girl was born at 39 weeks of the gestational period that was within the normal range, so she does not meet the criteria for SGA. On the other hand, the person with achondroplasia typically has short arms and legs, but she had a proportionate body. Another important cause for short stature, especially in under-developed countries, is malnutrition. The treatment for this underlying cause is the prescription of nutritional supplements and maintenance of nutritional status to prevent the development of malnutrition. It does not, however, lead to the treatment of previous developmental delay. In this case, the body mass index was found to be normal, precluding the need for nutritional supplements.

Mon'd Terki

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Research Concepts:

Short Stature

StatPearls Knowledge Base

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Moh'd Terbi

Question 924: A 2-year-old girl living in rural Tanzania is brought to a municipal hospital for fever and lethargy. She was previously healthy and meeting appropriate developmental milestones until three days ago when she became increasingly fussy and refused to take food or fluids by mouth. Her mother states that she has felt warm to the touch intermittently, but she has not taken the child's temperature at home. She also noted several new pruritic insect bites on the child's legs. Today she has become increasingly lethargic and has not wet a diaper, prompting the mother to travel several hours to have the child evaluated. The exam is significant for a high-grade fever, tachycardia to 165/min, and profound somnolence. A bedside chest x-ray is unremarkable. CBC, comprehensive metabolic panel, LDH, and blood culture are all within normal limits. Lumbar puncture is performed, and the CSF is unremarkable. Thick and thin smears reveal ring forms of P. ovale with 4.1% parasitemia. What is the next best step in the management of this patient?

Moh'd Terkj

Choices:

1. Discharge with hydroxychloroquine now and at 6, 24, and 48 hours
2. Discharge with a 14-day course of primaquine phosphate
3. Admit to the pediatric ward, give one dose of tafenoquine
4. Admit to the pediatric ward, start hydroxychloroquine now and at 6, 24, and 48 hours

Answer: 4 - Admit to the pediatric ward, start hydroxychloroquine now and at 6, 24, and 48 hours

Explanations:

- Parasitaemia dictates symptom onset and severity: symptoms typically develop with 0.002% parasitemia in naïve patients and 0.2% parasitemia in previously exposed patients.
- Severe infection usually exhibits parasitemia of 5%.
- Uncomplicated P. vivax or ovale infections in chloroquine-sensitive regions are treated with chloroquine phosphate or hydroxychloroquine, plus primaquine phosphate, daily for 14 days.
- Tafenoquine 300 mg once may be used in place of primaquine for adults or children over 16 years of age.

Mohd Terbi

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Research Concepts:

Malaria




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Question 925: A healthy newborn male was born full term to a 25-year-old primigravid. His mother had regular prenatal care and had no maternal illness. Labor and delivery were uneventful. The vital sign shows a cardiac rate of 140/min, respiratory rate 30 breaths/min, temperature 36.5 C (97.7 F), and oxygen saturation 99% on room air. On physical examination at 36 hours of life, a heart murmur was heard. Which of the following is the most common critical congenital heart defect that would potentially be missed with this examination?

Choices:

1. Tricuspid atresia
2. Truncus arteriosus
3. Coarctation of the aorta
4. Total anomalous pulmonary venous return

Moh'd Terbi

Answer: 3 - Coarctation of the aorta

Explanations:

- An infant is screened for critical congenital heart defects with peripheral pulse oximetry measurements.
- A pulse oximetry probe is attached to the infant's extremity that uses light to calculate the percentage of hemoglobin that is bound to oxygen in the blood.
- Two main premises exist for pulse oximetry as a screen for congenital heart defects: Hypoxemia, the most common early sign of a cyanotic congenital heart defect, presents before cyanosis may be evident. Secondly, patent ductus arteriosus may provide life-sustaining mixing of oxygenated and deoxygenated blood, depending on the defect, which results in a difference between pre-ductal (right upper extremity) and post-ductal (either lower extremity) oxygen saturations. If the pulse oximetry screen is concerning for congenital heart defects, a diagnostic echocardiogram should be promptly obtained.
- Providers caring for infants and even children should bear in mind that a normal pulse oximetry screen in the newborn nursery does not definitively rule out critical cardiac heart defects. The pulse oximetry screening test has a sensitivity of about 75% for critical congenital heart defect (CCHD) in general; however, the most commonly missed CCHD is coarctation of the aorta, for which the pulse oximetry screen has a sensitivity of only 36%. Although the pulse oximetry screening has a very high specificity of 99.9%, clinicians should be sure to consider other sources of hypoxemia in the infant, such as sepsis or inborn errors of metabolism.

Mich'l Terlin

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Research Concepts:

Newborn Screening

StatPearls Knowledge Base

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Moh'd Terbi

Question 926: A 17-year-old male presents to the office with complaints of decreased hearing and tinnitus for two months. He also reports a headache in the early morning. He denies any nausea, vomiting, fever, or trauma. There is a family history of brain tumor and hearing loss in his father. On examination, his temperature is 98 F, his pulse is 78/min, and his blood pressure is 124/78 mmHg. Rinne and Weber's test reveals bilateral sensorineural hearing loss. MRI of the brain shows a mass on the bilateral cerebellopontine angle along with extra-axial mass arising from the dura. Which of the following tumor is most likely associated with this condition?

Choices:

1. Ependymoma
2. Medulloblastoma
3. Acoustic neuroma
4. Pinealoma

Moh'd Terbi

Answer: 3 - Acoustic neuroma

Explanations:

- Acoustic neuroma is the most common tumor associated with neurofibromatosis 2.
- This patient with bilateral sensorineural hearing loss along with MRI showing a mass on the bilateral cerebellopontine angle along with extra-axial mass arising from the dura is most likely suggestive of NF2.
- NF2 is also associated with high morbidity and mortality.
- The most common feature of NF2 is the vestibular schwannomas, which present with tinnitus, hearing loss, and loss of balance. Besides, these individuals also develop non-vestibular schwannomas.

Mohd Terbi

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Research Concepts:

Neurofibromatosis Type 2




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Question 927: Concerned parents bring their 2-week old girl to the clinic because they are worried about her "yellow eyes." Jaundice is confirmed on examination. Blood tests reveal an increase in total bilirubin of 11 mg/dL with conjugated bilirubin of 0.2 mg/dL. The rest of the liver function tests, LDH, and CBC are normal. A trial of phenobarbital therapy is initiated to confirm the diagnosis, and the total bilirubin decreases by 25%. What is the most likely diagnosis?

Choices:

1. Dubin-Johnson syndrome
2. Crigler-Najjar type 1 syndrome
3. Crigler-Najjar type 2 syndrome
4. Rotor syndrome

Moh'd Terbi

Answer: 3 - Crigler-Najjar type 2 syndrome

Explanations:

- Inherited disorders of the bilirubin UDP-glucuronosyltransferase (UGT1A1), such as Gilbert syndrome and Crigler-Najjar syndrome, can impede the complete conjugation of bilirubin and thereby cause varying degrees of unconjugated hyperbilirubinemia, depending on inhibition of enzyme with each disease.
- In Gilbert syndrome, UGT1A1 enzyme activity is 10 to 30% of its normal, resulting in mild unconjugated hyperbilirubinemia with bilirubin levels below 5 mg/dL. In Crigler-Najjar type 1 syndrome (CNS1), UGT1A1 enzyme activity is absent and thereby leads to a severe increase in unconjugated bilirubin levels ranging from 20-45 mg/dL.
- Patients with Crigler-Najjar type 2 syndrome (CNS2) have less than 10% of the normal UGT1A1 activity, resulting in bilirubin levels of 5-25 mg/dL. Kernicterus is rare in CNS2.
- Patients with CNS2 respond to phenobarbital therapy. Because CNS2 is milder, phenobarbital is effective in reducing plasma bilirubin levels in these patients by 25 %. CNS1 does not respond to phenobarbital therapy. Dubin-Johnson syndrome and Rotor syndrome present with conjugated hyperbilirubinemia.

Mario Terhi

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Research Concepts:

Unconjugated Hyperbilirubinemia



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Moh'd Terbi

Question 928: A 1-year-old male is brought to the clinic for a routine check-up. The weight, head circumference, and length of the infant, amongst other parameters, need to be measured by the provider. Which of the following instruments will yield the most accurate measurement of the recumbent length of the child?

Choices:

1. Anthropometer rod
2. Horizontal length scale
3. Infantometer
4. Measuring tape

Moh'd Terbi

Answer: 3 - Infantometer

Explanations:

- Infantometer is the most accurate instrument for measuring recumbent length in infants. It holds the infant securely in place while taking the recumbent length measurements.
- This reduces the associated error incurred, making an infantometer more accurate compared to other instruments.
- Infantometer inhibits excessive movement of the infant, thus, overcoming errors in recumbent length readings.
- The anthropometer rod is ideal for standing height measurements. A horizontal length scale works along with the same principles as an infantometer. However, the movement of the infant may cause an error in the observations. This error is not seen with an infantometer.

Mohd Terbi

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Research Concepts:

Height Assessment




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Question 929: A 5-year-old male child was brought to the emergency department 30 minutes after swallowing a coin. He is currently asymptomatic and behaving normally. His vital signs include a blood pressure of 100/70 mmHg, pulse of 100/minute, respiratory rate of 19/minute, and a temperature of 37 C (98.6 F). Upon physical exam, the patient appears calm with no signs of distress. Which of the following is the next step in the management of the patient?

Choices:

1. Frontal and lateral chest radiographs
2. Emergent gastroenterology consultation for endoscopy and coin removal
3. Use of a handheld metal detector to determine the location of the coin
4. Frontal and lateral chest radiographs followed by a dose of glucagon

Moh'd Terbi

Answer: 1 - Frontal and lateral chest radiographs

Explanations:

- Coins are one of the most commonly ingested foreign bodies. 80% of foreign bodies spontaneously pass through the gastrointestinal tract without intervention. X-ray films should be obtained to identify and locate the object. Conservative management with stool inspection is a reasonable plan for low-risk objects.
- A handheld metal detector can be used to assist in tracking the coin's progression to avoid additional x-rays. However, the workup should start with a radiograph to assist in the identification of the object and to rule out the presence of a high-risk object that will require emergent intervention.
- A coin is not considered to be a high-risk object and usually passes spontaneously. Immediate endoscopy is not required following the ingestion of a coin in an asymptomatic patient.
- Conservative management and an outpatient referral to follow up with a gastroenterologist is not an unreasonable course of management. However, glucagon is not recommended in the pediatric population since it can induce vomiting, potentially increasing the risk of aspiration.

Mehri Terbi

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Research Concepts:

Gastrointestinal Foreign Body



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Moh'd Terbi

Question 930: A 2-year-old boy with a history of patent ductus arteriosus undergoes ligation. The surgery is successful, with no reported complications. However, a few hours post-op, the child is found to have new-onset hoarseness. The most likely cause is identified. Which of the following is a life-threatening complication that can result from the most likely cause of his hoarseness?

Choices:

1. Acute heart failure
2. Septic shock
3. Respiratory distress
4. Myxedema coma

Moh'd Terbi

Answer: 3 - Respiratory distress

Explanations:

- One anatomic marker for the location of the ductus is the recurrent laryngeal nerve. This nerve was damaged in this case. This can result in vocal cord dysfunction. The most life-threatening complication from this is respiratory distress due to paralysis of the vocal cords.
- The nerve originates from the vagus nerve and loops posteriorly around the ductus and ascends just behind the aorta.
- The recurrent laryngeal nerve is often injured during ductal ligation.
- Other structures that can be injured include the thoracic duct and phrenic nerve.

Mahdi Terbi

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Research Concepts:

Recurrent Laryngeal Nerve Injury




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Question 931: A 6-year-old male, who just immigrated from Africa, is being evaluated in the office due to concern from his adoptive parents. They note lethargy and a distended abdomen ever since arriving from his home country. The child has otherwise felt fine, and a review of systems is unremarkable. On physical exam, a protuberant abdomen is noted with ascites, and hepatomegaly is appreciated. The extremity exam reveals 2+ pitting edema. Which of the following is the best next step for this child?

Choices:

1. Dietary supplementation
2. Antihelminthic agent
3. IV fluid administration
4. Reassurance

Moh'd Terbi

Answer: 1 - Dietary supplementation

Explanations:

- The child, who has immigrated from a third-world country, likely has kwashiorkor, which is a form of severe protein malnutrition.
- As a result, vascular oncotic pressure is reduced, causing ascites and pitting edema. Furthermore, hepatomegaly is present due to the build-up of lipoproteins in the liver that cannot be excreted without transport proteins.
- Thus, the most appropriate treatment for this child is protein supplementation in the diet. Over time, this should correct the child's lethargy, and other symptoms noted.
- Given the absence of other symptoms, it is unlikely that a helminth is causing the conglomerate of symptoms in this patient. IV fluids are not appropriate here as that would only worsen the ascites and edema. Lastly, given that this is an abnormal finding for a young child, reassurance is not acceptable.

Monica Terbi

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Research Concepts:

Kwashiorkor




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Question 932: A three-year-old male is brought to the emergency department with parents reporting a first-time seizure thirty minutes ago. On detailed history taking, it was revealed that the seizure was generalized and tonic-clonic in nature, lasting about ten seconds. The parents explain that before the seizure, he was very somnolent. Currently, his vital signs, CBC, and comprehensive metabolic profile are within normal limits. The parents admit to having marijuana in the house. Which of the following is the most appropriate next step?

Choices:

1. CT of the brain
2. Lumbar puncture
3. Admit for overnight observation
4. Check a urine drug screen and consult case management prior to discharge to assure a safe home environment

Moh'd Terbi

Answer: 4 - Check a urine drug screen and consult case management prior to discharge to assure a safe home environment

Explanations:

- Cannabis exposure has been known to cause seizures in very young pediatric patients.
- Urine drug screens are not necessary for adults as they do not change management. However, in children, particularly with accidental ingestions, a urine drug screen may aid in the diagnosis and help to avoid more costly and invasive testing, such as neuroimaging and lumbar puncture.
- Urine drug screens test for the presence of the inactive metabolite THC-COOH, which is detectable for as little as six hours and as long as seven days in one-time users, but easily up to 30 days in a regular user.
- The threshold for a urinary screening of THC-COOH is 50 ng/mL. Reported false positives for THC-COOH include nonsteroidal anti-inflammatory agents, proton pump inhibitors, and riboflavin. However, it is very difficult to trigger a false positive with a detection concentration of 50 ng/mL.

Mohit Tevi

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Research Concepts:

Cannabinoid Toxicity




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improvement.

Moh'd Terbi

Question 933: A 17-year-old male patient presents to his healthcare provider for a sports physical. He has no complaints at this time. History is significant for left distal radial fracture status post repair at age 15. Family history is significant for hyperlipidemia in his father and melanoma in his mother. He denies tobacco, alcohol, and illicit drug use. He is 5 feet and 5 inches tall, 160 pounds, the temperature is 37 C, blood pressure is 110/70 mmHg, the pulse is 86/min, respiratory rate is 12/min, and oxygen saturation is 99% on room air. Physical exam shows regular rate and rhythm without murmurs, lungs are clear to auscultation bilaterally without wheezes, and the abdomen is soft, non-tender, non-distended with positive bowel sounds. Basic metabolic panel and complete blood count are within normal ranges, including serum creatinine level of 0.9 mg/dl. Urinalysis is within normal ranges except for 2+ protein. A urinalysis is repeated in a week that is negative for protein. What would be the most likely finding on renal biopsy?

Moh'd Terbi

Choices:

1. Anti-glomerular basement membrane (GBM) antibodies
2. Deposits that stain apple green on Congo red staining under a polarizing microscope
3. Minimal to moderate thickening of the glomerular capillary wall
4. Non-caseating granulomas and interstitial nephritis

Answer: 3 - Minimal to moderate thickening of the glomerular capillary wall

Explanations:

- In a study by Robinson et al., minimal to moderate thickening of the glomerular capillary wall was found by renal biopsy in 43% of specimens of patients with orthostatic proteinuria.
- Orthostatic proteinuria is a benign condition.
- There is no indication for renal biopsy in asymptomatic isolated orthostatic proteinuria but should be considered if the patient presents with signs of vasculitis, active urinary sediments, hypertension, persistent or gross hematuria, renal insufficiency, or hypocomplementemia.
- Anti-GBM antibodies are found in Goodpasture disease, deposits that stain apple-green on Congo red staining under a polarizing microscope are found in amyloidosis, and non-caseating granulomas and interstitial nephritis are found in sarcoidosis.

Mona Terbi

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Research Concepts:

Orthostatic Proteinuria




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Question 934: You are counseling a parent with children with asthma who has allergies to dust and dust mite. Which of the following environmental control measures should you recommend as a first step?

Choices:

1. Reduce indoor humidity to less than 50 percent
2. Use allergen proof covers on mattresses and pillows
3. Keep bedroom windows open at night
4. Use fans in the bedrooms

Moh'd Terbi

Answer: 2 - Use allergen proof covers on mattresses and pillows

Explanations:

- The following are environmental control measures that parents can implement in the home to reduce dust and dust mite exposures: Dust your child's bedroom each week with a damp cloth, keep humidity levels below 50%, remove dust collectors from the bedrooms - eg stuffed animals, miniblinds etc, use allergen proof covers on mattresses and pillows, wash sheets, blankets and pillow cases in hot water once a week
- Signs of dust allergy include sneezing, runny nose and nasal congestion. This can be accompanied by itchy eyes and nose, a postnasal drip and cough.
- Dust mites thrive in humid conditions when humidity levels are more than 50%. Parents can use dehumidifiers to keep the humidity below 50%. Hygrometers can be used to measure humidity levels.
- House dust can be found in bed linens, cushions and carpeting. Parents should focus on bedrooms when implementing dust control measures.

Mon'd Terbi

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Research Concepts:

Dust Mite Allergy




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improvement.

Moh'd Terbi

Question 935: A 17-year-old man is an unrestrained driver in a high-speed motor vehicle accident. On arrival to the emergency department, he states that his neck hit the steering wheel and his anterior neck is sore. The neck has no obvious injury, but his voice is mildly hoarse, and he is otherwise stable with no complaints. What is the best initial step in the management of this patient?

Choices:

1. Observation
2. Discharge home
3. CT scan of the neck/larynx
4. Immediate intubation

Moh'd Terbi

Answer: 3 - CT scan of the neck/larynx

Explanations:

- The patient has signs and symptoms of blunt laryngeal injury and has a mechanism that could produce laryngeal injury.
- Because he is talking, his airway is stable.
- A CT scan can safely define the scope of injury in this patient.
- Patients with signs or symptoms of laryngeal injury must have imaging of the airway. Because the patient 's airway is intact, immediate intubation is not indicated.

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Research Concepts:

Moh'd Terbi

Neck Trauma




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Question 936: A 17-year-old male newly diagnosed with myelogenous leukemia becomes neutropenic after starting his chemotherapy treatment. He is placed on oral levofloxacin and remains in the hospital for observation. Four days later, He developed a fever of 103 F (39.6 C). His white blood cell count is 900 cells/microL with an absolute neutrophil count of 0 cells/microL. Physical examination is unremarkable except for tenderness, warmth, and erythema around the chemotherapeutic catheter port site. Which of the following is the next best step in the management of this patient?

Choices:

1. Change levofloxacin to vancomycin
2. Change oral levofloxacin to intravenous (IV)
3. Change levofloxacin to aztreonam and ceftriaxone
4. Administer piperacillin/tazobactam and vancomycin

Moh'd Terbi

Answer: 4 - Administer piperacillin/tazobactam and vancomycin

Explanations:

- Piperacillin/ tazobactam is a recommended empiric broad-spectrum monotherapy for febrile neutropenia. Also, vancomycin was added because of suspected MRSA (Methicillin-resistant staphylococcus aureus). Erythema, warmth, and tenderness are concerning for MRSA infection at the site of the chemotherapeutic catheter site.
- Patients considered high risk (MASSC score of less than 21) require immediate empiric antibiotics.
- Early antibiotics have been shown to be beneficial for decreased mortality rates.
- Febrile neutropenia is the most common life-threatening complication of cancer therapy.

Mohd Terbi

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Research Concepts:

Febrile Neutropenia




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Question 937: A 2-week-old neonate presents with vomiting and jaundice. On examination, she has icterus, hepatomegaly, and cataracts of both eyes. Newborn screening tests show and abnormal result. What is the most appropriate management?

Choices:

1. Check amino acids levels
2. Check ammonia level
3. Have mother stop breastfeeding the child
4. Consult ophthalmology

Moh'd Terbi

Answer: 3 - Have mother stop breastfeeding the child

Explanations:

- Galactosemia or galactose-1-phosphate uridyltransferase (GALT) deficiency leads to further organ damage if galactose is not removed from the diet.
- Neonates with this disorder must avoid the galactose found in breast milk and most formulas. Typically, soy-based formula is prescribed.
- The organ damage is reversible if the condition is identified early and managed accordingly.
- Classic galactosemia occurs in 1/60,000 births. Duarte galactosemia occurs in 1/4000 births. In Duarte galactosemia, GALT enzyme activity is about 25% and typically has few if any clinical manifestations.

Mohd Terbi

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Research Concepts:

Galactose 1 Phosphate Uridyltransferase Deficiency




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Question 938: A 3 month-old female infant born at home with no medical care presents with umbilical hernia, hoarse cry, and enlarged tongue. She has a coarse face, thick hair, and dry skin. What is the most worrisome consequence of this condition if untreated?

Choices:

1. Cholestasis
2. Neurodevelopmental delay
3. Delayed bone maturation
4. Soft tissue myxedema

Moh'd Terbi

Answer: 2 - Neurodevelopmental delay

Explanations:

- Neurodevelopmental delay is a feared complication of untreated congenital hypothyroidism.
- It is irreversible if not diagnosed early and treated with thyroxine hormone.
- Neonatal jaundice and delayed growth and maturation are also common.
- In some cases, severe impairment in linear growth and bone development which in combination with the neurological problems leads to difficulty in gait, spasticity and autistic behavior.

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Moh'd Terbi

Research Concepts:

Congenital Hypothyroidism




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Question 939: A 9-year-old female patient presents to the hospital with a productive cough. Her condition started 2 days ago and is associated with fever and fast breathing. The vital signs show a temperature of 37.8 C (100.4 F), pulse rate of 100/min, respiratory rate of 40 breaths/min, and oxygen saturation of 93% on room air. Chest and lung examination show symmetrical chest expansion, with intercostal retractions and wheezing on the right lung field. Complete blood count shows a hemoglobin 14 g/dL, hematocrit 40%, WBC 18,000/microlitre, neutrophils 60%, lymphocytes 40%, and platelet count 200,000/microliter. The chest x-ray shows lobar consolidation of the right lung. The nasopharyngeal swab is positive for influenza. What is the drug of choice for this patient?

Choices:

1. Oseltamivir
2. Zanamivir
3. Peramivir
4. Baloxavir

Moh'd Terbi

Answer: 1 - Oseltamivir

Explanations:

- Community-acquired pneumonia is a leading cause of hospitalization and mortality and incurs significant health care costs.
- Influenza and non-influenza respiratory viruses have been increasingly detected as pathogens depending on the availability of polymerase chain reaction-based detection methods.
- A five-day therapy with oseltamivir is recommended for all patients who test positive for the influenza virus.
- For outpatients with delayed presentation (greater than 48 hours from onset of symptoms), there is no benefit. Still, any hospitalized patients with influenza must be treated with this agent irrespective of the time of presentation from the onset of illness.

Moh'd Terbi

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Research Concepts:

Community-Acquired Pneumonia




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Question 940: A 6-month-old boy is brought by his father to the hospital for a routine visit. The father states that his son has started babbling out random unintelligible words. He starts crying when the provider picks him up but stops when his father grabs him back. The patient can transfer a stuffed toy from one hand to another. His father says that he has now started to sit up unsupported. He recognizes his name and gives a social smile when the provider calls out to him. The father is distressed that he hasn't started crawling yet and is worried that his son may have some developmental disorder. His family history is significant for a 3-year-old sister who has a delay in language development. What is the best next step in the management of this patient?

Choices:

1. Psychological evaluation
2. Gross motor evaluation
3. Hearing evaluation
4. Reassurance

Moh'd Terbi

Answer: 4 - Reassurance

Explanations:

- This patient has met all his developmental milestones.
- A 6-month-old infant should be able to babble and smile socially.
- Stranger anxiety is also developmentally normal at 6 months of age.
- Crawling and sitting unsupported is not expected at this age.

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Research Concepts:

Developmental Stages of Social Emotional Development In Children

Moh'd Terbi




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Question 941: A 2-year-old male with no significant past medical history has consumed an unknown quantity of drain cleaner. His vital signs are stable, but he is refusing to eat. He is not vomiting at this time. What is the best step in management?

Choices:

1. Immediate gastric lavage
2. Endoscopy within 12 to 24 hours
3. Have the child drink a weak acid solution to neutralize the alkaline drain cleaner
4. Induce emesis

Moh'd Terbi

Answer: 2 - Endoscopy within 12 to 24 hours

Explanations:

- The child should have nothing by mouth and inserting an NG tube could cause further damage.
- Upper endoscopy is done to assess the mucosal injury.
- Emesis would cause reexposure to the caustic chemicals.
- Neutralization of the alkali can cause a thermal burn as this is an exothermic reaction.

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Research Concepts:

Moh'd Terro

Caustic Ingestions




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Question 942: A 17-year-old male patient presents to the hospital with a sore throat. His condition is associated with fever and chills, difficulty in swallowing, referred ear pain, headache, and muscle aches. The vital sign shows a temperature of 39 C (102.2 F), pulse rate 105/min, and respiratory rate of 22 breaths/min. The physical exam reveals a dry tongue, erythematous enlarged tonsils, pharyngeal exudate, and tender cervical lymphadenopathy. What would be most beneficial investigation in establishing a diagnosis in this case?

Choices:

1. ASO titer
2. CRP
3. Rapid antigen detection test (RADT)
4. Throat culture

Moh'd Terbi

Answer: 3 - Rapid antigen detection test (RADT)

Explanations:

- Group A streptococcus is the most common bacterial cause of pharyngitis in children and adolescents with a peak incidence in winter and early spring. Group A streptococcus pharyngitis is also more common in school-aged children or in those with direct relation to school-aged children.
- The Infectious Disease Society of American (IDSA) currently notes that the signs and symptoms of GAS pharyngitis overlap too broadly with other infectious and non-infectious causes to allow for a precise diagnosis to be made based upon history and examination alone.
- For those who undergo testing, the IDSA recommends that a rapid antigen detection test (RADT) be employed as the first-line measure to aid the provider in the diagnosis of GAS pharyngitis. Positive tests do not need to be backed up by a throat culture in all age groups due to the highly specific nature of the RADT.
- In children, a negative RADT should be followed by a throat culture, but this is not needed in adults due to both the low incidence of GAS pharyngitis and acute rheumatic fever seen in this population. Anti-streptococcal antibody titers are not recommended to aid the provider in the acute diagnosis of GAS pharyngitis because the test reflects previous infections.

Mohit Tehri

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Research Concepts:

Streptococcal Pharyngitis

StatPearls Knowledge Base

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Moh'd Terbi

Question 943: A 16-year-old boy presents to the emergency department for worsening right knee pain, which started approximately 3 days ago. The patient does not recall any inciting trauma to the affected knee but admits to having unprotected sexual intercourse. He states that his knee has progressively become more swollen, warm, and red, and he is no longer able to bear any weight on the affected extremity. Upon arrival, his vital signs reveal temperature 101.5 F, pulse 98/min, blood pressure 102/54 mmHg, and respiratory rate 12/min. On physical exam, the patient's right knee appears visibly swollen, erythematous, and tender to palpation. The patient is also unable to range his knee actively and exhibits pain with micromotion during passive motion. Aspiration of the knee is planned. Which of the following synovial results ist most likely be obtained from knee aspiration in this patient?

Choices:

Mohsen Terdi

1. Straw-colored, 7,000 WBC/microL, 40% PMNs, and negative Gram stain.
2. Straw-colored, 125 WBC/microL, 20% PMNs, and negative Gram stain.
3. Opaque appearance, 55,000 WBC/microL, 92% PMNs, negative Gram stain.
4. Opaque appearance, 1,100 WBC/microL, 15% PMNs, negative Gram stain.

Answer: 3 - Opaque appearance, 55,000 WBC/microL, 92% PMNs, negative Gram stain.

Explanations:

- A patient presenting to the emergency room with an acutely swollen, painful, and erythematous joint must be presumed an infection (i.e., septic joint) until proven otherwise. While other conditions may present similar to a septic joint, such as gout, a patient that is febrile, and that has pain with micromotion at a joint are telltale signs of an infected joint, and thus warrant a joint aspiration. Given the patient's history of unprotected sex in a young male, the most common infectious cause would be Neisseria Gonorrhea, which accounts for about 20% of all septic arthritis cases. If the results of the arthrocentesis confirm an infection, this patient would require immediate intravenous antibiotics and potentially an emergent surgery to irrigate the joint and prevent further degradation of the articular cartilage.
- The color of the synovial fluid can provide the clinician with possible clues to the underlying diagnosis as certain conditions can present with characteristic colors. A septic joint fluid analysis will typically present with a yellow to even greenish color and may contain debris from the articular cartilage degradation that occurs. Often, the combination of debris and purulent exudate makes the fluid of septic arthritis appear opaque and cloudy and is usually not translucent. Normal synovial fluid, on the contrary, is either straw or pale yellow in color, is semitransparent, and does not contain any debris. An inflammatory arthropathy, such as gout or pseudogout, will have a similar color to normal synovial fluid; however, the transparency may be decreased (i.e., more opaque) as well as the viscosity. Hemorrhagic synovial fluid from a presumed trauma will usually present as frank blood (which can also be due to a traumatic arthrocentesis) or have a dark/amber appearance.

- The WBC count and concentration of PMN's in the synovial fluid, are essential indicators in making the diagnosis of septic arthritis. For a native joint, a WBC/microL count of >50,000 cells is diagnostic of septic arthritis. Additionally, a fluid analysis containing >80% PMN's or fluid segmental neutrophils is highly indicative of a septic joint. Although inflammatory arthropathies (i.e., gout or pseudogout) may present with a similar fluid analysis, the fluid will also contain crystals, which is a key differentiating factor.
- On synovial fluid analysis, the gram stain for a presumed septic joint may or may not stain positive. Studies have shown that gram stains may only identify the causative organism in less than 33% of confirmed septic arthritis cases. Thus, while this test may prove useful if positive, it may be an unreliable indicator of infection as most of the bacteria are typically sequestered to the synovial lining of the joint.

Mohd Terbi

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Research Concepts:

Arthrocentesis




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Question 944: A 16-year-old female was brought to the emergency department with a complaint of severe headache and vomiting for the past six hours. The pain is holocranial, and she has never had this much severe headache in her life. Her mother states that she was found to have some organ anomalies when she was born but was not evaluated later. On examination, she is confused. Her pupils are bilaterally equal in size and reacting. There is no focal neurological deficit. She has neck stiffness. She undergoes a computed tomogram scan of the brain, which shows hemorrhage involving the left Sylvian fissure. Which of the following parts of her body needs imaging later so as to identify the associated congenital anomaly?

Choices:

1. Heart
2. Colon
3. Kidneys
4. Liver

Moh'd Terbi

Answer: 3 - Kidneys

Explanations:

- There are some congenital causes that are associated with subarachnoid hemorrhage (SAH). These congenital causes may reveal a familial occurrence and are associated with certain systemic disorders. Autosomal dominant polycystic kidney disease is strongly associated with berry aneurysms of the cerebral arteries, which can present with SAH.
- Other possible congenital multi-organ diseases associated with cerebral aneurysms include Ehlers-Danlos and Marfan disease. Marfan and Ehlers-Danlos might be suggested by a chest CT looking for dilation of the aortic root and dural ectasia of the thoracic spine.
- Risk factors for SAH include family history, smoking, hypertension, heavy alcohol use, and cocaine use.
- Patients with SAH may report a thunderclap headache or "worst headache I have ever had." They may present with photophobia, loss of consciousness, intraocular hemorrhage, or third cranial nerve palsy. CT is the initial test of choice. The gold standard is a lumbar puncture. If xanthochromia is seen, then SAH has been present for several hours. It may be negative if present less than 2 hours and is most sensitive 12 hours after SAH. Xanthochromia is a yellowish color and indicates the presence of bilirubin within 9 to 15 hours of SAH.

Mohit Tariq

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Research Concepts:

Subarachnoid Hemorrhage

StatPearls Knowledge Base

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Moh'd Terbi

Question 945: A 10-year-old girl is evaluated for the first time because she was referred by her provider for a new murmur found on routine health examination. What is the best first step in diagnosing this child?

Choices:

1. Electrocardiogram
2. Echocardiogram
3. Chest x-ray
4. Detailed history and physical exam

Moh'd Terbi

Answer: 4 - Detailed history and physical exam

Explanations:

- The best initial step for managing or diagnosing any murmur is a detailed history and focused physical exam.
- A detailed medical history should focus especially on changes in exercise tolerance or activity level. Any chest pain or syncope on exertion should raise flags concerning for heart disease.
- A family history is also important as certain congenital heart lesions have a familial or genetic predisposition.
- During the physical exam, it is important not to jump straight to cardiac auscultation. General appearance of the patient can give insight into the underlying cardiac conditions, if any, as some syndromes have highly associated cardiac lesions. The abdominal exam is also very important as any evidence of hepatomegaly can give clues into underlying heart disease or failure.

Mon'd Terbi

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Research Concepts:

Innocent Murmur




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Question 946: A 1-year-old boy is brought in by his mother because he has not achieved independent standing. The mother informs the provider that her son drags his legs while crawling. He was born at 32 weeks of gestation after a prolonged vaginal delivery. His Apgar scores were 3 and 7 at 1 and 5 minutes, respectively. His mother did not drink alcohol, smoke tobacco, or use illicit drugs before or during pregnancy. The infant's vaccinations are up to date, and his vital signs are normal. On physical examination, he is alert and well-appearing. The bilateral lower extremities are hypertonic with significant resistance with passive attempts at extension. Patellar and Achilles reflexes are hyperactive, and Babinski sign is appreciated bilaterally. Given the likely diagnosis, which of the following is the most significant risk factor for this infant's condition?

Choices:

1. Hypoxia
2. Prematurity
3. Intrauterine stroke
4. Intrauterine infection

Moh'd Terbi

Answer: 2 - Prematurity

Explanations:

- Cerebral palsy (CP) is a nonprogressive, permanent movement disorder that occurs following abnormal brain development or brain injury, usually prenatally, during childbirth, or in early infancy.
- The etiology of CP is often multifactorial. The risk of developing CP increases as gestational age decreases, with infants born at less than 28 weeks gestational age being most at risk. The prevalence is also higher in low birth weight infants. Very low birth weight (less than 1500 grams) infants born are at the greatest risk; 5-15% of infants born weighing less than 1500 grams develop CP.
- Medications used for spasticity include benzodiazepines, baclofen, dantrolene, tizanidine, cyclobenzaprine, botulinum toxin, and phenol. Surgical management options include placement of a baclofen pump, selective dorsal rhizotomy, tendon release, hip derotation/rotation surgery, spinal fusion, strabismus repair, and deep brain stimulation.
- Complications of prematurity that can cause CP include periventricular leukomalacia, intraventricular hemorrhage, and periventricular infarcts.

Mcm'a Terry

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Research Concepts:

Cerebral Palsy



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Moh'd Terbi

Question 947: A 16-year-old high school student with a history of epilepsy usually with good control presents with increased seizure frequency. His epilepsy is usually well controlled with two antiepileptic medications. Previous outpatient MRI and EEGs were normal. Family members volunteer that they have noticed an increase in seizure clusters in the past at times of stress. There have been three seizures today though the details are unclear. The patient was apparently able to text when sensing the onset of seizures and at times has been able to verbalize during an event. The family and patient present today concerned that seizures may increase due to stress from approaching exams and are requesting additional medications. What is the most appropriate next management step in this scenario?

Choices:

1. Increase medications empirically with stressful events approaching
2. Reassure the patient and family and schedule outpatient followup in 6 weeks time
3. Arrange for prompt video-EEG monitoring
4. Add additional antiepileptic medications to control increased seizure frequency

Mohamed Terbi

Answer: 3 - Arrange for prompt video-EEG monitoring

Explanations:

- Video-EEG is the gold standard for diagnosis of psychogenic nonepileptic seizures (PNES). This patient may have PNES given the history of a pattern of increase in number of events with stress. Video-EEG at a time of an event cluster might would be the ideal diagnostic strategy.
- Video-EEG monitoring if diagnostic for PNES would allow initiation of appropriate evaluation and counseling strategies. If diagnostic of PNES, antiepileptic medications should be withdrawn.
- At video-EEG monitoring, observation of waxing and waning consciousness, out of phase shaking movements, pelvic thrusting, side to side head shaking, and eye closure during the event are suggestive of PNES.
- Empirically adding additional antiepileptic medications is not the best strategy given the uncertainty of diagnosis of a seizure disorder. Reassurance and/or outpatient management is not appropriate as PNES can only be diagnosed with video-EEG monitoring.

Mehic Tarik

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Research Concepts:

Psychogenic Nonepileptic Seizures



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Moh'd Terbi

Question 948: A 17-year-old male is brought to the office for headaches for three weeks. He has daily, dull pain in the frontal area of his head that is associated with nausea and vomiting. He has some episodes of blurred vision in the right eye. Vital signs are stable. Examination reveals bilateral optic disc swelling. Motor and sensory examinations are unremarkable. The MRI shows a lesion of the frontal lobe that is well defined, of low intensity and does not enhance. Which of the following is the most likely recommended treatment for this condition?

Choices:

1. Chemotherapy
2. Radiotherapy
3. Third ventriculostomy or shunt placement
4. Surgery

Moh'd Terbi

Answer: 4 - Surgery

Explanations:

- The patient has low-grade glioma (LGG) in the frontal lobe. In this age, LGGs are among the common brain cancers.
- Nausea, vomiting, and headache are common presentations for a brain tumor due to compression effects. Surgery is the mainstay of treatment for LGG.
- MRI shows well defined, low intensity, and no enhancement of the mass, and this is the description of low-grade glioma.
- Surgery is recommended in LGGs. Radiotherapy should be given to any patient with progressive neurologic symptoms. Chemotherapy and radiotherapy can be given in the recurrence of the tumor or post-operatively if needed rather than adjunctively.

Mohud Terbi

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Research Concepts:

Low Grade Gliomas




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Question 949: A 17-year-old male patient presents complaining that his heart feels as if it is “fluttering.” He also complains of weakness, fatigue, muscle cramps, and constipation for the past week. He has a past medical history of hypertension treated with verapamil and hydrochlorothiazide. His medication dosages were recently adjusted one week ago. His blood pressure is 132/88 mmHg, his heart rate is 86 beats per minute, his respiratory rate is 15 breaths per minute, and his temperature is 98 F (36.7 C). On physical examination, the patient has an irregular heart rhythm. Muscle strength is 2/5 in the bilateral upper and lower extremities. The patient has a serum sodium level of 135 mEq/L, a potassium level of 2.6 mEq/L, a chloride level of 89 mEq/L, a bicarbonate level of 23 mEq/L, a magnesium level of 1.5 mg/dL, and creatinine of 1.0 mg/dL. He is administered 40 mEq/L oral potassium chloride. What is the most appropriate next step in the management of this patient?

Moh'd Terbi

Choices:

1. Recommend discontinuation of verapamil and hydrochlorothiazide
2. Hemodialysis
3. Electrocardiography
4. Discharge with follow-up within a week

Answer: 3 - Electrocardiography

Explanations:

- This patient has symptoms of palpitations, weakness, fatigue, muscle cramps, and constipation, in the setting of a serum potassium level of 2.6 mmol/L, indicating hypokalemia.
- Hypokalemia can result in a variety of cardiac dysrhythmias. Due to this risk, an electrocardiogram (ECG) should be performed in the emergency department setting for a patient with symptomatic hypokalemia. Although cardiac dysrhythmias or ECG changes are more likely to be associated with moderate to severe hypokalemia, there is a high degree of individual variability, and can occur with even mild decreases in serum levels. This variability is dependent on concomitant factors such as magnesium depletion and digitalis therapy, among others. Moreover, characteristic ECG changes do not manifest in all patients.
- The ECG changes that occur with hypokalemia are T-wave flattening initially, followed by ST depression and the appearance of a U wave that can be difficult to distinguish from the T wave. The U wave is often seen in the lateral precordial leads of V4 to V6. Prolongation of the PR and QT intervals can also occur. The risk of arrhythmias is highest in older patients, those with heart disease, and those receiving digoxin or antiarrhythmic drugs.
- Hemodialysis is done to rapidly remove potassium from the body in severe hyperkalemia if kidney function is severely impaired.

Med'd Terms

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Research Concepts:

Hypokalemia

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Moh'd Terbi

Question 950: Diagnosis of anterior cruciate ligament tear is best made by what physical exam technique?

Choices:

1. Posterior drawer sign
2. Anterior drawer sign
3. Joint aspiration
4. Lachman maneuver

Moh'd Terbi

Answer: 4 - Lachman maneuver

Explanations:

- The Lachman maneuver is considered positive when there is no solid end point with anterior motion of the tibia.
- It is used to test anterior cruciate ligament stability and is considered diagnostically superior to the anterior drawer test.
- To perform the test, the patient is supine with the hip of the affected leg flexed approximately 20 to 30 degrees. The examiner places one hand on the anterior thigh, and the other behind the tibia, with the thumb on the tibial tubercle.
- The examiner then attempts to displace the tibia anteriorly, looking for excessive P to A translation and/or spongy end feel. It is important to rule out PCL injury first, because in PCL injury the tibia is often posteriorly displaced from its normal position, and may give a false impression of excessive P to A movement.

Mohd Terbi

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Research Concepts:

Lachman Test




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Question 951: A 5-year-old boy with well-controlled atopic dermatitis is brought to the clinic by his parents with excess day time sleepiness and noisy breathing, which is worse at night for the past 6 months. Physical exam reveals a tired child who is not in distress, tends to keep his mouth open and speaks with a nasal twang. His ENT exam is remarkable for some tonsillar hypertrophy without exudates, and his tympanic membranes are not bulging, but have decreased light reflex bilaterally. His chest exam is unremarkable with no wheeze or stridor. What is the next best step in the management of this patient?

Choices:

1. Refer to allergist
2. Obtain radiograph of the neck
3. Obtain polysomnography
4. CT scan of the mastoid

Moh'd Terbi

Answer: 3 - Obtain polysomnography

Explanations:

- The patient in this vignette has likely obstructive sleep apnea (OSA).
- The gold standard test for OSA is polysomnography. This can also determine the severity of OSA by calculating the apnea-hypopnea index. Apnea-hypopnea index = total number of apneas and hypopneas/total duration of sleep in hours.
- An apnea-hypopnea index of less than one is considered to be normal in children. An apnea-hypopnea index of more than 20 is considered severely abnormal.
- Lateral neck radiograph can sometimes suggest adenoidal hypertrophy but is not diagnostic of OSA. In acute airway obstruction, lateral radiographs may be able to identify a radioopaque foreign body, supraglottic when 'thumb sign' present, soft tissue enlargement suggestive of a retropharyngeal abscess and 'steeple sign suggestive of croup. Overall, lateral neck radiographs are not diagnostic of OSA or other upper airway obstructive diseases. The tympanic membrane findings suggest middle ear effusion, but there was no indication of mastoid involvement; therefore CT of the mastoid is not indicated. Nasal allergies can contribute to adenoidal hypertrophy, and evaluation by an allergist can help with managing allergies. However, polysomnography is needed to confirm the diagnosis of OSA.

Alon's Tech

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Research Concepts:

Apnea In Children

StatPearls Knowledge Base

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Moh'd Terbi

Question 952: A 17-year-old girl presents with complaints of nausea and multiple episodes of vomiting. She also complains of two episodes of non-bloody diarrhea. The detailed history reveals the consumption of rice at a local restaurant a few hours ago. On presentation, she is afebrile, has a pulse rate of 84 bpm, a blood pressure of 110/60 mmHg, and a respiratory rate of 18 breaths/min. The physical examination does not reveal any significant findings. She has a hemoglobin level of 10 g/dl, a white cell count of 9500/mm3, and a platelet count of 345,000/mm3. Supportive management is initiated. The organisms stain purple on a Gram-stain, and further microscopic studies reveal the presence of aerobic bacilli. What is the most likely causative organism in this patient?

Choices:

1. Vibrio cholera
2. Clostridium perfringens
3. Listeria monocytogenes
4. Bacillus cereus

Moh'd Terbi

Answer: 4 - Bacillus cereus

Explanations:

- Bacillus cereus is a Gram-positive aerobic bacillus, responsible for causing an emetic type of disease characterized by nausea and vomiting, or a diarrheal type of disease characterized by non-bloody diarrhea.
- A preformed toxin called cereulide results in nausea and vomiting following the consumption of reheated rice or pasta.
- Spores survive the reheating process of rice. When the temperature gets suitable, the spores tend to germinate and cause symptoms as the food is consumed.
- The symptoms resolve after lasting for about 24 hours, and supportive care is all that is needed.

Mahdi Terbi

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Research Concepts:

Gram Positive Bacteria




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Question 953: A 16-year-girl calls the clinic with concerns of delayed periods. She was seen in the clinic two weeks ago following unprotected intercourse. She was screened for infection and was prescribed ulipristal acetate (UPA) 30 mg for postcoital contraception. She took her prescribed medication around 90 hours after unprotected sex. She sounded very anxious and reported that she her semester exam is coming up and that she cannot afford to get pregnant for atleast one year. She has regular menstrual cycles every 28 days. This time she has not menstruated for 31 days. Which of the following should be done considering the effects of UPA on menstrual cycle and pregnancy?

Choices:

1. Pregnancy test should be done immediately to rule out pregnancy as cycle is delayed
2. Patient should be reassured that delay in cycle is expected after hormonal post-coital contraception for up to one week
3. Patient should be informed that it is possible that the method has failed as she took the medicine after 90 hours of sexual intercourse
4. Patient should be advised to see a specialist for possible medical termination of pregnancy as UPA is harmful to fetus

Mohit Tejuj

Answer: 2 - Patient should be reassured that delay in cycle is expected after hormonal post-coital contraception for up to one week

Explanations:

- Postcoital contraceptives decreases the chances of pregnancy either by delaying ovulation or inhibiting fertilization. Ovulation eventually returns, and the patient gets withdrawal bleeding. Patients should be counseled about this effect and warned to expect a delay in the cycle by 5 to 7 days. This patient probably has a delayed cycle and should be reassured. There is no need for immediate pregnancy test.
- As all oral hormonal post-coital contraceptive pills delay ovulation, they are most likely to prolong the cycle and delay in the menses is expected up to one week. It is reasonable to reassure the patient and ask her to check for pregnancy if the patient has not resumed her menses in a week of missed period.
- Ulipristal acetate has a wider window of efficacy and is licensed for use up to 120 hours after unprotected intercourse(UPSI). Unlike levonorgestrel and combined pills whose efficacy declines with time, ulipristal acetate has shown to have the same efficacy from day one to day five. It is the preferred oral regimen if the patient presents after 72 hours of unprotected sexual intercourse. So it is inappropriate to inform this patient that the method has failed.
- Cycles are expected to be delayed after post-coital contraception. No evidence of teratogenicity with pregnancy reported so far with oral hormonal postcoital contraceptives and pregnancy can be continued if the patient conceived despite taking oral hormonal post-coital contraception.

Mohini Tekwani

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Research Concepts:

Postcoital Contraception




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Moh'd Terbi

Question 954: A 24-month-old male with a history of medium-chain acyl-CoA dehydrogenase deficiency (MCADD) is scheduled for an umbilical hernia repair under anesthesia. His geneticist was not available to discuss the patient before his arrival late the night before his surgery. The patient will need to be fasting 8 hours before his procedure and will require maintenance fluids in the perioperative period. Which of the following is the crucial element in his maintenance IV fluids to reduce his risk of metabolic crisis during his period of fasting?

Choices:

1. Potassium Chloride
2. Sodium Acetate
3. Sodium Bicarbonate
4. Dextrose

Moh'd Terbi

Answer: 4 - Dextrose

Explanations:

- During times of fasting, patients with medium-chain acyl-CoA dehydrogenase deficiency (MCADD) are unable to synthesize ketones and maintain blood glucose. Therefore it is essential to provide dextrose in maintenance fluids in the perioperative period to reduce the risk of metabolic crisis.
- Hyperglycemia may also occur while receiving dextrose containing fluids, and blood glucose should be closely monitored.
- Ideally, before a surgical procedure requiring full anesthesia, a medical geneticist should be consulted to provide an adequate amount of dextrose in fluids and assess other requirements in the perioperative period.
- Although electrolytes are essential factors, only dextrose or another form of glucose will reduce the patient's risk for a metabolic crisis.

Mohd Terbi

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Research Concepts:

Medium-Chain Acyl-COA Dehydrogenase Deficiency




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Question 955: A 7-year-old boy presents with seven days of fever and lethargy. On physical examination, is he is febrile, tachycardic, and mildly tachypneic with normal blood pressure. He appears ill with nuchal rigidity. A non-contrast computed tomography (CT) scan of the brain shows no masses and no midline shift. A lumbar puncture is performed. The cerebrospinal fluid has 100 WBC/microL with 100 percent lymphocytes, protein 160 mg/dL, glucose 20 mg/dL, and negative gram stain. He is started on isoniazid (INH), rifampin (RIF), pyrazinamide (PZD), and ethambutol (EMB). Which other drug should be used in addition to the 4-drug regimen?

Choices:

1. Dexamethasone
2. Rituximab
3. Tocilizumab
4. Streptomycin

Moh'd Terbi

Answer: 1 - Dexamethasone

Explanations:

- A corticosteroid is added to the four-drug regimen in patients with tubercular meningitis (TBM) to reduce permanent sequelae of the disease.
- Steroids reduce permanent neurological damage. However, TBM can cause a myriad of neurologic sequela present at the time of the initial presentation and can produce residual effects even after successful treatment.
- Intravenous dexamethasone is used at a high dose (75 mg/day), and an oral formulation is tapered slowly over 4 to 6 weeks in the treatment of TBM.
- The prognosis of TBM is based on the patient's neurological status at the time of initial presentation and timeliness of the initiation of anti-tuberculous agents.

Mohd Terbi

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Research Concepts:

Tuberculous Meningitis




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Question 956: A 16-year-old female presents to the healthcare provider with the complaint of pain and swelling of the left leg for one day. She had sustained an injury on the left leg three days ago but denied receiving treatment for it. The patient also denies a history of travel, coagulation disorders, and shortness of breath. On examination, the left leg is larger than the right, is erythematous, warm, and tender to the touch. Lab work helps the provider diagnose the patient with left leg cellulitis with bacterial resistance to methicillin and oxacillin. The patient is placed on an intravenous infusion of vancomycin when she suddenly develops an erythematous rash on the face, neck, and chest. What rate of infusion may have prevented this complication?

Choices:

1. 1 gram over 10 minutes
2. 1 gram over 30 minutes
3. 1 gram over 45 minutes
4. 1 gram over 60 minutes

Moh'd Terbi

Answer: 4 - 1 gram over 60 minutes

Explanations:

- Vancomycin flushing syndrome is a rate related adverse reaction to intravenous vancomycin. The maximum infusion rate should be 1 gram over one hour.
- Vancomycin flushing syndrome is also known as red neck syndrome.
- Vancomycin flushing syndrome rash is pruritic, erythematous, involves the face, neck, and upper thorax. It may be accompanied by tachycardia, dizziness, and hypotension.
- More severe vancomycin flushing syndrome reactions occur in children and adults under the age of 40.

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Moh'd Terbi

Research Concepts:

Vancomycin Flushing Syndrome




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Question 957: A young patient presented with multiple attacks of fear and anxiety that last from 30 seconds to one minute. The patient sometimes would feel confused if the attacks were severe and most of the time has rising epigastric sensation. Which one of the following in the possible underlying pathology?

Choices:

1. Frontal lobe epilepsy
2. Pain disorder
3. Temporal lobe epilepsy
4. Psychogenic non-epileptic seizure

Moh'd Terbi

Answer: 3 - Temporal lobe epilepsy

Explanations:

- Temporal lobe epilepsy can be characterized by rising epigastric sensation and also temporary attacks of panic and anxiety. These might be associated with autonomic symptoms such dry mouth.
- Frontal lobe epilepsy classically is associated with focal jerking and bicycling movements.
- Temporal lobe epilepsy often misdiagnosed as a panic attack.
- Psychogenic non-epileptic seizure usually diagnosed when the patient is not responsive to the treatment with normal investigation. Those patients should be investigated using video EEG.

Mahdi Terbi

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Research Concepts:

Temporal Seizure




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Question 958: A 13-year-old adolescent presents to the office for a well-child visit. His parents are concerned about the way he is acting. He does not like to spend time with his family and prefers to stay in his room when there are family events. He constantly fights with his 14-year old sister. Despite all this, he is doing well in school, has a supportive group of friends, and gets mostly As. What is the best advice to give to his parents?

Choices:

1. The boy needs a psychological evaluation as he may be depressed
2. Insist that he needs to partake in family events
3. This is concerning and may indicate that patient is developing a psychiatric disorder
4. This behavior is normal for his age

Moh'd Terbi

Answer: 4 - This behavior is normal for his age

Explanations:

- The adolescent period is characterized by physical and psychological changes in the individual and increasing demands from and influence of peers and school. Adolescence is characterized by a tendency to indulge in risky behavior.
- Adolescents first have concrete thinking and then transition to abstract thinking. During adolescence, teenagers tend to separate from their parents.
- Depressive symptoms in adolescence include weight loss, changes in sleeping habits, anhedonia, decreased concentration, thoughts of suicide, or death.
- The adolescent period is characterized by physical and psychological changes in the individual and increasing demands from and influence of peers and school. Adolescence is characterized by a strong tendency to experiment with risky behavior.

Mehdi Terbi

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Research Concepts:

Child Development



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Question 959: An 18-month-old full-term boy is brought to the clinic for a well-child examination. He has been eating and sleeping well and has a 20-word vocabulary. At age 2 months, within minutes of the diphtheria-tetanus-acellular pertussis vaccine, the boy developed a severe allergic reaction. He was taken to the emergency department and epinephrine was given immediately. His vaccinations are up to date except for the DTP vaccine. Which of the following vaccines is most strongly contraindicated in the future other than the diphtheria-tetanus-acellular pertussis vaccine?

Choices:

1. Plain meningococcal vaccine
2. Conjugated meningococcal vaccine
3. Flu vaccine
4. BCG vaccine

Moh'd Terbi

Answer: 2 - Conjugated meningococcal vaccine

Explanations:

- Patients who are known to have severe allergic reactions to any of the vaccine's components should not continue the remaining vaccine dosages or take any vaccine containing its components in the future.
- Patients who are known to have severe allergic reactions to vaccines containing diphtheria or tetanus toxoids are contraindicated to administer conjugated meningococcal vaccines that contain these toxoids (ex. MenACWY-TT conjugated to tetanus toxoid, MenACWY-DT conjugated to diphtheria toxoid, and MenACWY-CRM conjugated to the nontoxic mutant of diphtheria toxin).
- Plain meningococcal vaccine is very safe and is not contraindicated in patients who are known to have severe allergic reactions to vaccines containing diphtheria or tetanus toxoids.
- Usually, the first dose of the vaccine should be given with precaution. Epinephrine or emergency care should be accessible in case of severe allergic reactions.

Mona Terlu

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Research Concepts:

Meningococcal Vaccine



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Moh'd Terbi

Question 960: A 15-year-old boy presents to the clinic complaining of blurry vision. Past medical history and review of systems are unremarkable. Pupillary reflexes and extraocular movements are intact. Visual acuity testing is within normal limits. Visual field testing reveals bitemporal hemianopsia. A brain MRI without and with intravenous contrast is obtained, which demonstrates a nonenhancing, partially cystic lesion within the sella turcica with T1 and T2 signal intensities consistent with either blood or calcifications. What is the next best step in the evaluation of this patient?

Choices:

1. CT sella protocol without intravenous contrast
2. CT sella protocol with intravenous contrast
3. CTA brain with intravenous contrast
4. Transcranial ultrasonography

Wah'd Terbi

Answer: 1 - CT sella protocol without intravenous contrast

Explanations:

- Most sellar lesions are easily differentiated on MRI, but calcifications and blood products pose a unique diagnostic dilemma.
- Both calcium and certain blood products have ferromagnetic properties, which cause them to appear dark on T1 and T2 weighted sequences. In some scenarios, calcifications cannot be distinguished from blood products and vice versa.
- In these circumstances, CT imaging is helpful since the attenuation of calcifications is much higher than that of blood, easily distinguishing the two. In this scenario, the presence of calcifications would imply a benign process such as a craniopharyngioma or Rathke cleft cyst.
- Intravenous contrast is not helpful in this scenario since the contrast-enhanced MRI showed that the mass was nonenhancing. CTA is performed to evaluate for vascular pathologies such as aneurysm, dissection, or cavernous carotid fistulization. Transcranial ultrasonography is a noninvasive tool that can be used to measure intracranial blood flow. This tool cannot provide images and cannot be used to image the pituitary region. Thus, transcranial ultrasound does not play a role in evaluating sellar masses.

Mehri Terhi

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Research Concepts:

Pituitary Gland Imaging

StatPearls Knowledge Base

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Moh'd Terbi

Question 961: A 17-year-old female presents with the first episode of seizure. She has complained of fever and headache for the past five days. She has a history of type 2 diabetes mellitus. She denies smoking or alcohol use. Her vital signs are as follows; blood pressure 130/80 mmHg, heart rate 89 beats/min, respiratory rate 17 breaths/min, and temperature 39.3 C (102.7 F). She was drowsy but easily arousable, not oriented to time and place but oriented to person, and could follow commands. According to her family, she had had double vision before going into a coma. The motor and sensory examinations are normal. There is positive nuchal rigidity, and Babinski is positive bilaterally. Blood cultures and antibiotics are started. Which of the following is the next best step for this patient?

Choices:

1. Refer to ophthalmologist
2. Computed tomography scan of the head
3. Lumbar puncture
4. Urine toxicology

Mon'd Terbi

Answer: 2 - Computed tomography scan of the head

Explanations:

- Fever, neck stiffness, and altered mental status are the classic triad of symptoms for meningitis; however, all three are only present in 41% of cases of bacterial meningitis. The triad is most commonly seen in older patients.
- A non-contrast computed tomography (CT) scan of the head should be performed before lumbar puncture if the patient has a risk of herniation.
- Risk factors include papilledema on the exam, new-onset seizures, focal neurologic deficits, or an immunocompromised state.
- Bacteremia, or bacteria in the blood, can result in bacteria crossing the blood-brain barrier. This can only be accomplished by certain bacteria, most notably Neisseria meningitidis and Streptococcus pneumoniae. Direct extension of otitis media or sinusitis to the central nervous system (CNS) may also occur.

Mehdi Taribi

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Research Concepts:

Bacterial Meningitis




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Question 962: An 8-year-old boy is brought to the clinic with the chief complaints of disruptive behavior and a fall in his grades. The mother reveals that the teachers at school have complained about his behavior on multiple occasions. When reprimanded, the child gets angry and throws a tantrum. The teacher is interviewed, and she confirms the mother's history. She reports that he starts his work without a fuss but starts laughing loudly and disrupts the entire class. This happens at least 4-5 times every day. The examination reveals a cheerful child. Developmental history reveals no delays. While performing a routine exam, the child begins to laugh explosively. This lasts for about 1 minute. A seizure disorder is suspected. Which of the following regions would serve as a focus for this kind of seizure?

Choices:

1. Prefrontal cortex
2. Neocortical temporal lobe
3. Rolandic area
4. Motor cortex

Moh'd Terbi

Answer: 1 - Prefrontal cortex

Explanations:

- This patient with recurrent episodes of explosive laughter, not precipitated by any conversation or emotion, lasting for 1 minute, is most likely a case of hyper-motor seizure.
- Frontal lobe epilepsy (FLE), after temporal lobe epilepsy, is the second most common type of the localization-related epilepsy of childhood.
- Among the dorsolateral frontal lobe seizures, when the prefrontal/ mesial premotor/ middle cingulate/ anterosuperior insular/ caudate nucleus/orbitofrontal cortex is involved, it presents with variable clinical manifestations and is classified as “hyper-motor seizures.” These seizures present with a sequence of somatosensory auras followed by bizarre gestures, laughing, shouting, bicycle peddling, and thrashing of the extremities. These hyper- mistaken for nightmares, and may have a very brief post-ictal state.
- Neocortical temporal lobe epilepsy presents with visual hallucinations rather than explosive laughter. Motor cortical involvement would present as jerking movements of a limb or face or lips, based on the focus of the seizure in relation to the body's representation on the cortex. Rolandic epilepsy presents with hypersalivation, facial hemisensory anomalies, and behavioral disorders rather than intermittent explosive laughter.

Mohit Tehlan

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Research Concepts:

EEG Localization Related Epilepsies

StatPearls Knowledge Base

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Moh'd Terbi

Question 963: A 2-month-old baby is seen for a well-child care visit. The child has closed anterior fontanelle with palpable coronal suture ridging. Craniosynostosis is suspected. Which of the following statements is true about craniosynostosis?

Choices:

1. Positional plagiocephaly involves the premature fusion of sutures
2. Apert syndrome is a form of craniosynostosis that is not accompanied by syndactyly
3. Leaving craniosynostosis untreated has an impact on the neurodevelopment of the child
4. Surgery between 2 to 4 years old is essential for a better prognosis in these patients

Moh'd Terbi

Answer: 3 - Leaving craniosynostosis untreated has an impact on the neurodevelopment of the child

Explanations:

- Left untreated craniosynostosis can affect the development of the child. This is due to the restriction for growth of the brain and damage to the brain tissue due to increased intracranial pressure.
- The degree of developmental delay depends on the kind of craniosynostosis. Children with sagittal synostosis have a lower risk of learning disabilities compared to those with metopic, unicoronal, or lambdoid synostosis.
- With early identification of developmental gap and placement in support programs, a negative academic and cognitive outcome for these children could be reduced if not prevented.
- When surgical intervention is done in a timely manner, have a very good outcome with fairly normal growth and development. Follow up for another fusion of sutures and head growth is crucial as to determine the need for re-intervention in these patients, with a special focus on syndromic craniosynostosis.

Mohsin Tariq

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Research Concepts:

Craniosynostosis




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improvement.

Moh'd Terbi

Question 964: A 4-year-old male child is brought to the emergency department with a complaint of fainting after an episode of severe coughing. His mother mentions that he initially had nasal discharge following which severe coughing episodes have started. The child appears normal between these episodes of cough. The patient is not up to date on his vaccinations. Physical examination is unremarkable. Vitals reveal a low-grade fever. Which of the following tests should be done in this patient to confirm the diagnosis?

Choices:

1. Chest X-ray
2. Blood culture
3. Polymerase chain reaction (PCR)
4. Peripheral blood smear

Moh'd Terbi

Answer: 3 - Polymerase chain reaction (PCR)

Explanations:

- Pertussis, literally meaning “a violent cough,” and also known as whooping cough, is caused by Bordetella pertussis.
- Nasopharyngeal culture and PCR may make laboratory confirmation of pertussis, but the fastidious and slow-growing Bordetella organisms require specialized media, and cultures are typically not positive for 3 to 7 days.
- PCR is more sensitive and specific than culture for the diagnosis of the Bordetella pertussis.
- Chest X-ray findings are nonspecific and may show peribronchial thickening, atelectasis, or infiltrate. The classic association, though not often seen, is a “shaggy” right heart border.

Mahdi Terbi

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Research Concepts:

Pertussis




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Question 965: An 8-year-old male presents to the clinic complaining of headaches that are worse in the morning and improves throughout the day. The patient states his headaches have been occurring over the past two months and his mother reports that he is often tired, has lost 10 lbs over the past month, and frequently has low-grade fevers overnight. The mother also reports that his teachers have noted that his handwriting skills have regressed and he has a new head tilt that he did not have when the school year started. On physical exam, the patient has multiple scabs on his extremities that are associated with him falling at school. What is the most likely diagnosis?

Choices:

1. Atypical migraine
2. Spinal tumor
3. Brain abscess
4. Medulloblastoma

Moh'd Terbi

Answer: 4 - Medulloblastoma

Explanations:

- This patient is presenting with constitutional symptoms, including fevers, weight loss, fatigue, and night sweats. It is atypical for any pediatric patient to present with constitutional symptoms, indicating a chronic, systemic process. Although not disease-specific, these symptoms most commonly arise due to infectious conditions (HIV, TB) or rheumatologic conditions (SLE). However, oncologic processes have to be considered in all cases. The use of type B symptoms to describe constitutional symptoms was first used in reference to hematologic malignancies, such as lymphomas and leukemias.
- The constellation of symptoms presented here is suspicious for intracranial tumors. He is having difficulty with handwriting (fine motor instability), gait (gross motor instability), and tilting his head to one side (visual disturbances affecting oculomotor nerve causing him to try to accommodate by tilting his head). His early morning headaches that improve during the day coupled with visual disturbances are concerning for intracranial hypertension.
- Early morning headaches associated with visual disturbances are symptoms of intracranial hypertension; difficulty with gait and coordination are indicative of cerebellar dysfunction. Medulloblastomas account for the majority of posterior fossa tumors and for 20% of all pediatric brain tumors, making them the most frequent malignant brain tumor of childhood.
- Although a brain abscess could present with constitutional symptoms, it is more associated with high fevers of unknown origin, constant headaches, personality changes; it is also not associated with specific posterior fossa signs. A spinal tumor would lead to back pain, paresthesias, and bowel or bladder dysfunction. While atypical migraines do not have the typical heralding symptoms such as auras, they will not be associated with the combination of constitutional symptoms, gait instability,

Mon's Tech

and visual disturbances. Moreover, migraines are triggered, rather than associated temporally with the early morning, and improve with abortive therapies, usually rest, hydration or medications.

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Research Concepts:

Medulloblastoma



Mohamed Ferbi

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Question 966: A 16-year-old boy is brought to the outpatient clinic for the evaluation of lower limb weakness. He reports difficulty in climbing stairs, standing from a sitting position, and running for the past 1 year. He denies any recent trauma, sudden loss of vision, or focal weakness of any other body parts. His deep tendon reflexes are 2+ and sensations in both the limbs are intact. On physical examination, there is bilateral hypertrophy of calf muscles and demonstrates a waddling gate. His vital signs are within normal limits. On lab examination, the creatine kinase level is 1775 IU/L. What is the most common pattern of inheritance of this condition?

Choices:

1. Autosomal dominant
2. Autosomal recessive
3. X linked dominant
4. X linked recessive

Moh'd Terbi

Answer: 4 - X linked recessive

Explanations:

- A young man with adult-onset proximal muscle weakness and pseudohypertrophy of calf muscles with a waddling gait likely has Becker muscular dystrophy. Becker muscular dystrophy (BMD) is an X-linked recessive disorder due to mutation in the dystrophin gene that results in progressive muscle degeneration and proximal muscle weakness.
- The defective gene is located in the Xp21.2 chromosome and the defect is inherited as an X-linked recessive trait. Patients without a clear X-linked pattern of inheritance may have defects in other genes, affecting the dystrophin-associated glycoproteins.
- On microscopic examination, the hallmark of Becker muscular dystrophy is ongoing myofiber necrosis and regeneration. Active muscle fiber necrosis and cluster of basophilic regenerating fibers are more prominent in younger age. In contrast, myofiber splitting with necrosis, increased internal nuclei, fiber hypertrophy, fatty replacement, and endomysia fibrosis are conspicuous in older age.
- When muscular dystrophy is suspected after history and examination, creatine kinase level followed by dystrophin gene deletion analysis and muscle biopsy with dystrophin antibody staining is the mainstay of laboratory studies to confirm the diagnosis.

Mohit Tariq

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Research Concepts:

Becker Muscular Dystrophy

StatPearls Knowledge Base

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Moh'd Terbi

Question 967: A 15-month old male presents to the emergency department with fevers, cough, nasal congestion, rhinorrhea, and conjunctivitis. He has not received any vaccinations since birth, as per the parents' request. The patient has a history of recent travel four days ago to visit his grandparents, who were noted to be ill with a "viral" illness. On physical examination, the patient is febrile, tachycardic, without hypotension. He was noted to have watery eyes with discharge, rhinorrhea, erythematous oral mucosa with clusters of white spots on the buccal surface, and a diffuse maculopapular rash. Which of the following infection control measures are needed in the care of this patient?

Choices:

1. Initiate standard contact precautions only
2. Initiate standard contact and airborne isolation precautions
3. Initiate standard contact and droplet precautions
4. Reverse isolation

Mon'd Terbi

Answer: 2 - Initiate standard contact and airborne isolation precautions

Explanations:

- Due to the patient's vaccination status and clinical presentation, the patient most likely has measles and thus requires standard and airborne isolation precautions.
- Measles has an inherent infectious efficiency where the particles of respiratory secretions can remain suspended in the air for extended periods and maintain their infectivity.
- Thus, the patient must be placed in airborne isolation precautions, in a private room, with negative air pressure. Susceptible individuals should not provide direct care to these patients, and immune healthcare workers should wear a respirator with a filtering capacity of 95% that allows a tight seal over the nose and mouth (N95 mask).
- Standard isolation is a precaution that is followed for the care of all patients, including hand hygiene and the use of gloves, gowns, and eye protection if exposure to blood or body secretions is possible. Contact precautions are used for the care of patients with multi-drug resistant bacteria (such as methicillin-resistant staphylococcus aureus). Droplet precautions are reserved for conditions where the respiratory secretions remain in the air for limited periods, such as patients with Bordetella pertussis, Neisseria meningitidis, influenza, adenovirus.

Monica Terry

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Research Concepts:

Rubeola (Measles)

StatPearls Knowledge Base

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Moh'd Terbi

Question 968: A 25-year-old woman gives birth to a healthy boy via normal vaginal delivery at term. He weighs 8.1 lbs, and his APGAR score was eight and nine at one minute and five minutes, respectively. Her pregnancy was uneventful except testing positive for a Group B streptococcus infection during the 36th week. Baby's blood test one day after birth reveals high phenylalanine to tyrosine ratio. Which of the following is the best initial therapy for the neonate?

Choices:

1. Urgent enzyme replacement
2. Ultraviolet light therapy
3. Lactose-free formula
4. Phenylalanine restricted diet

Moh'd Terbi

Answer: 4 - Phenylalanine restricted diet

Explanations:

- This baby most likely has phenylketonuria which is an autosomal recessive disease caused by a lack of the enzyme that metabolizes phenylalanine to tyrosine. Lack of the enzyme phenylalanine hydroxylase results in the toxic accumulation of the phenylalanine. These patients are treated by life-long dietary therapy focused on maintaining low Phe levels and adequate Tyr intake.
- In phenylketonuria, metabolites can accumulate and cause mental retardation. These dietary interventions are generally effective at preventing the most severe cognitive impairment due to high Phe levels.
- The specialized diet can be difficult for older children to follow, and supervision and blood monitoring are required.
- Enzyme replacement therapy for PKU has not been possible since PAH is unstable. The FDA has recently approved an enzyme substitution therapy for PKU that can lower Phe levels.

Mona Terki

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Research Concepts:

Phenylketonuria




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Question 969: A full term infant displays respiratory distress and hypoxemia shortly after delivery. Cyanosis is relieved with crying. What is the next best step for diagnosing the infant's condition?

Choices:

1. Nasal cannula with 100% oxygen
2. Suction catheter insertion through the nose
3. Continuous positive airway pressure
4. Orogastric suctioning

Moh'd Terbi

Answer: 2 - Suction catheter insertion through the nose

Explanations:

- The newborn is displaying signs of bilateral choanal atresia.
- Attempting to pass a firm suction catheter through the nasal cavity is a diagnostic procedure that can be used initially.
- If unable to pass a firm suction catheter, then maintain an airway with the insertion of an oral airway and obtain a diagnostic CT scan.
- If available, use a McGovern nipple to maintain an adequate oral airway. Make a large opening in the intraoral nipple by cutting its end off, then secure it in the mouth with ties around the infant's occiput. Passing a flexible feeding tube may produce false negative results due to coiling in the nose.

Mohd Terbi

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Research Concepts:

Choanal Atresia




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Question 970: A 3-year-old is playing in the garage while her father is working on the car. Soon, she starts vomiting and gagging, and smells of gasoline. A few hours later, she develops a cough, subcostal retractions, and tachypnea. What is the next appropriate management?

Choices:

1. Insert a nasogastric tube (NG) tube and start activated charcoal
2. Obtaining chest x-ray and continuous pulse oximetry
3. Bronchoscopy
4. Insert an NG tube and perform lavage

Moh'd Terbi

Answer: 2 - Obtaining chest x-ray and continuous pulse oximetry

Explanations:

- Hydrocarbons have high volatility and low viscosity.
- Hydrocarbons are likely to cause respiratory symptoms if aspirated.
- Symptomatic treatment is indicated and may include intubation and mechanical ventilation.
- NG tube with or without activated charcoal should be avoided in children, and charcoal will not adsorb gasoline.

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Research Concepts:

Moh'd Terbi

Hydrocarbon Toxicity




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Question 971: A 6-month-old girl with no prior stooling issues is brought to the emergency department by her parents. They report that she began to fuss and cry less than one hour previously. They noticed a reddish mass emerging from her rectum and rushed to the hospital. On examination, the child is fussy but easily consolable by parents, has normal vital signs. There is a likely rectal prolapse, but no other abnormalities found on the general examination, including an examination of the child's back. What test is most appropriate as an adjuvant to treatment in this patient?

Choices:

1. A karyotype
2. A sweat chloride test
3. A rectal suction biopsy
4. An ultrasound of the sacral area

Moh'd Terbi

Answer: 2 - A sweat chloride test

Explanations:

- Congenital hypothyroidism, cystic fibrosis, myelomeningocele, Hirschsprung disease, and spina bifida are associated with rectal prolapse in young infants.
- All young infants that present with rectal prolapse should undergo diagnostic evaluation for cystic fibrosis.
- Rectal prolapse in a young infant should prompt a careful physical examination of the back and consideration of further diagnostic evaluation for myelomeningocele if there are concerning findings, but this child's exam is normal.
- Rectal prolapse in a young infant should prompt further history on stooling patterns, careful physical examination of the anogenital region, including rectal tone, and possible referral for further evaluation of Hirschsprung disease. However, this child's stooling history is unremarkable.

Wahyu Teruji

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Research Concepts:

Rectal Prolapse




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Question 972: A 16-year-old nulliparous girl presents to the hospital with a 2-day history of heavy vaginal bleeding with clots. She denies sexual activity and missed her period one week ago. Which of the following is the best initial step in the management of this patient?

Choices:

1. Reassurance
2. Progesterone prescription
3. Urine pregnancy testing
4. Pelvic ultrasound

Moh'd Terbi

Answer: 3 - Urine pregnancy testing

Explanations:

- The patient needs a pregnancy test in the office as soon as possible.
- Many patients have difficulty being honest about sexual activity.
- The most important diagnoses to rule out are miscarriage and ectopic pregnancy.
- An ultrasound is also indicated, but not before a urine pregnancy test.

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Research Concepts:

Moh'd Terbi

Vaginal Bleeding




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Question 973: A 17-year-old female is being evaluated for hyponatremia several days after the resection of a pituitary tumor. The serum sodium level is 126 mEq/L, the serum osmolality is 266 mOsm/L, and the urine osmolality is 110 mOsm/L. Clinically, the patient does not seem to be dehydrated and is doing well. Which of the following is the next best step in the management of this patient?

Choices:

1. Dextrose 5% in half normal saline bolus
2. 3% saline bolus
3. Salt restriction
4. Fluid restriction

Moh'd Terbi

Answer: 4 - Fluid restriction

Explanations:

- The patient presents with SIADH (syndrome of inappropriate antidiuretic hormone). It is a syndrome that presents with hyponatremia 135 mEq/L with a serum osmolality 280 mEq/L and a urine osmolality >100 mOsm/L.
- These patients are normovolemic and have no renal failure and no thyroid failure. These patients have no edema and have a normal adrenal function.
- Major causes of SIADH are head injuries, brain tumors, cerebral hemorrhage/ stroke, or cerebral infections. It also can be caused by medications like desmopressin, carbamazepine, cisplatin, and tricyclic antidepressants. It is typically seen after pituitary surgeries but also after major abdominal and thoracic surgeries.
- Initial treatment of SIADH consists of fluid restriction in asymptomatic patients.

Moh'd Terbi

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Research Concepts:

Syndrome of Inappropriate Antidiuretic Hormone Secretion




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Question 974: A 16-year-old male patient presents with a limp and persistent pain in his left knee after playing in a soccer tournament last weekend. His mother is very concerned because a relative's son was recently treated for primary bone cancer. Limb Xrays show a destructive lesion in the distal femur and a displaced pathologic fracture. What is the most appropriate next step in treatment?

Choices:

1. Open biopsy of the bone lesion
2. Chemotherapy, radiation, and removal of the malignant tumor
3. Non-invasive immobilization of the fracture with a brace or cast
4. Surgical stabilization of the fracture with an open reduction and internal fixation

Moh'd Terbi

Answer: 3 - Non-invasive immobilization of the fracture with a brace or cast

Explanations:

- The case example is concerning for an adolescent patient with primary bone cancer and associated pathologic fracture. The most important first step of treatment is the immobilization of the fracture.
- Noninvasive techniques for fracture stabilization, such as immobilization with a brace or cast, should be tried before invasive procedures.
- The most common primary bone cancer in adolescents is osteosarcoma. The treatment for osteosarcoma is neoadjuvant chemotherapy, surgical resection, and adjuvant chemotherapy. There is no role for radiation in the treatment of primary osteosarcoma.
- Biopsy to determine a histologic diagnosis is important for the workup of primary bone cancer. However, immobilization of the fracture and diagnostic imaging must be completed before the biopsy. Imaging will help to identify which areas of the tumor to be taken in biopsy and to determine the extent of disease.

Moh's Terus

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Research Concepts:

Primary Bone Cancer



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Moh'd Terbi

Question 975: A 6-day-old boy is readmitted to the hospital because of worsening jaundice. He was born at term via repeat C-section to a 28-year-old gravida 2, now para 2 mother. The mother's pregnancy was uncomplicated, including prenatal labs within normal limits. Maternal blood type is O positive, and the neonate's blood type is B positive and Coombs positive. The neonate was discharged home at three days of life with a transcutaneous bilirubin of 12 mg/dL. Results of his labs today show a total bilirubin of 18 mg/dL, direct bilirubin fraction 0.5mg/dL, reticulocyte count 8.5%, and hematocrit 44%. The neonate is started on phototherapy with a biliblanket and an overhead bililite. According to the American Academy of Pediatrics, which of the following best describes intravenous immunoglobulin (IVIG) use for this infant?

Choices:

Mom'd Tenth

1. IVIG is indicated if the bilirubin level remains the same after 6 hours of phototherapy.
2. There is no role of IVIG in ABO incompatibility.
3. IVIG is indicated if total bilirubin is within 2-3 mg/dL of exchange range in this patient.
4. High-dose IVIG (2–2.5 g/kg) is recommended for infants with ABO incompatibility.

Answer: 3 - IVIG is indicated if total bilirubin is within 2-3 mg/dL of exchange range in this patient.

Explanations:

- The infant in this vignette has unconjugated hyperbilirubinemia due to ABO incompatibility. Phototherapy is the first-line treatment for unconjugated hyperbilirubinemia.
- American Academy of Pediatrics recommends administration of IVIG in ABO incompatibility if serum bilirubin is within 2-3 mg/dL of exchange range at a dose of 0.5-1 g/kg.
- It is unclear whether or not IVIG reduces the need for exchange transfusion in ABO incompatibility.
- IVIG acts by blocking Fc receptors on red blood cells (RBCs) and prevents their lysis by transplacentally transferred maternal IgG antibodies. In unconjugated hyperbilirubinemia due to ABO incompatibility, maternal anti-A or anti-B antibodies of the IgG class crosses the placenta and causes lysis of fetal or neonatal RBCs with type A, type B, or type AB blood type.

Mona Terbi

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Research Concepts:

Neonatal Jaundice




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Question 976: A 17-year-old female presents with complaints of intermittent hematuria and flank pain for the last 3 months. She also has hypertension which has been resistant to medical therapy. A physical examination is done, which reveals an abdominal bruit, a blood pressure of 180/110 mmHg, and a heart rate of 96 beats per minute. Conventional angiography confirms the diagnosis and shows a pressure gradient of more than 10%. Which of the following is the primary method for treatment in these patients?

Choices:

1. Surgical resection and grafting
2. Percutaneous transluminal angioplasty
3. Percutaneous transluminal angioplasty with stent
4. Vascular bypass grafting

Moh'd Terbi

Answer: 2 - Percutaneous transluminal angioplasty

Explanations:

- Percutaneous transluminal angioplasty (PTA) is the first-line modality for renal fibromuscular dysplasia revascularization.
- There is no indication for stent placement in fibromuscular dysplasia under most circumstances.
- Revascularization is indicated in young adults with resistant hypertension to prevent ischemic nephropathy in severe stenosis and the goal is to cure hypertension.
- Surgical revascularization is recommended for patients with smaller renal arteries, branched renal arteries, and failure of the PTA.

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Moh'd Terbi

Research Concepts:

Fibromuscular Dysplasia




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Question 977: A 12-year-old male is seen for fatigue, poor growth, and dwindling visual acuity at night. A blood smear shows the presence of red blood cells with multiple spicules. Both his parents are healthy and closely related to each other. What else may be associated with this disease?

Choices:

1. Schistocytes
2. Increased need for blood transfusions
3. Low cholesterol levels
4. Splenomegaly

Moh'd Terbi

Answer: 3 - Low cholesterol levels

Explanations:

- Acanthocytes are red blood cells that are dense and contracted with multiple spicules or thorny projections. The thorn-like surface protrusions vary in length, width, and surface distribution.
- Abetalipoproteinemia is an autosomal recessive disorder caused by mutations in the microsomal triglyceride transfer protein (MTTP) gene. It encodes a protein that is essential for the formation and secretion of apolipoprotein B-containing lipoproteins from the intestine (chylomicrons) as well as the liver (low-density lipoprotein and very low-density lipoprotein).
- The inability to synthesize and transport apo B causes a severe reduction of all major plasma lipids and a disproportionate decrease in the lecithin in exchange for sphingomyelin, which is more rigid. This results in an imbalance in membrane lipids and causes immature red blood cells to stiffen, pucker, wrinkle, and form spicules.
- The appearance of these cells is impressive, but the overall membrane viscosity is not increased enough to interfere with microcirculation transit, so hemolysis is mild.

Mona Terbi

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Research Concepts:

Abetalipoproteinemia



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Moh'd Terbi

Question 978: A 12-year-old boy presents with dyspnea, chest pain, and a cough productive of thick green sputum. He has a past medical history of cystic fibrosis. His vital sign shows oxygen saturation 98% on room air, respiratory rate 24 per minute, heart rate 105 beats per minute, blood pressure 125/80 mmHg, and temperature 40.2 C (104.4 F). On examination, wheezes, rhonchi, and crackles are heard. There is dullness to the percussion of the chest. Sputum culture shows Pseudomonas aeruginosa. Cefepime is prescribed. Which of the following is the most appropriate adjuvant antibiotic?

Choices:

1. Ciprofloxacin
2. Trimethoprim-sulfamethoxazole
3. Doxycycline
4. Amoxicillin

Moh'd Terbi

Answer: 1 - Ciprofloxacin

Explanations:

- Ciprofloxacin can be used in combination with other antibiotics to cover P. aeruginosa. Previous studies on juvenile animals have displayed cartilage damage and arthropathy due to quinolone use. Due to this, quinolone use in pediatric patients is limited.
- Some quinolones are approved by the food and drug administration (FDA) for pediatric use in cases such as inhalation anthrax, complicated urinary tract infections, pyelonephritis, plague, conjunctivitis, otitis, sinusitis, respiratory tract infections, pneumonia, and gastrointestinal diseases.
- Common side effects in pediatric patients include gastrointestinal events (nausea, vomiting, diarrhea, clostridium difficile-associated colitis) and arthralgias.
- Excessive use of quinolones (mostly in the adult population) has led to the increased emergence of bacterial resistance.

Mehdi Terbi

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Research Concepts:

Quinolones




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Question 979: A 1-month-old girl is being evaluated for an abnormal newborn blood spot screening showing elevation of acylcarnitines. The patient is feeding well with cows milk-based formula and meeting all her developmental milestones. Further biochemical testing shows an elevated plasma acylcarnitines showing increased C8/C10:1 ratio. A mutation of which of the following genes is most likely responsible for the patient's condition?

Choices:

1. ACADM gene
2. ACADVL gene
3. ACADS gene
4. CPTT2 gene

Moh'd Terbi

Answer: 1 - ACADM gene

Explanations:

- This clinical presentation is concerning for a fatty acid beta-oxidation disorder, likely medium-chain acyl-CoA dehydrogenase (MCAD) deficiency.
- An increased C8/C10:1 ratio in the plasma acylcarnitine profile is one of the diagnostic biochemical findings in MCAD deficiency.
- The ACADM gene is responsible for producing medium-chain acyl-CoA dehydrogenase.
- The most common allele mutation in the ACADM gene is the 985A>G causing MCAD deficiency. More than 80% of patients will have at least 1 allele with this mutation.

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Moh'd Terbi

Research Concepts:

Medium-Chain Acyl-COA Dehydrogenase Deficiency




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Question 980: A 17-year-old male presents to the healthcare provider convinced that he has stomach cancer despite having previously seen six different clinicians who confirm that no stomach pathology or cancer is present. This patient believes this because he occasionally hears his stomach "roar and grumble," and the sounds are concerning to him. How long must symptoms be present for a patient to be diagnosed with the likely presenting psychiatric disorder?

Choices:

1. Five days
2. Four weeks
3. Three months
4. Six months

Moh'd Terbi

Answer: 4 - Six months

Explanations:

- Illness anxiety disorder is defined as a psychiatric disorder in which a person is overly concerned about having or developing a serious medical condition.
- People with illness anxiety disorder experience persistent anxiety or fear of developing or having a serious medical illness. This fear persists despite appropriate physical examination revealing negative (normal) results as well as laboratory testing yielding negative (normative) results.
- People who suffer from illness anxiety disorder may pay excessive attention to normal bodily sensations (such as functions of digestion or sweating) and misinterpret these sensations as indicators of severe disease.
- Illness anxiety disorder must be present for a minimum of six months for a diagnosis.

Mon'd Terbi

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Research Concepts:

Illness Anxiety Disorder




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Question 981: A 35-year-old male presents for a routine check-up. He recently immigrated from Sudan. He needs a medical evaluation for health insurance. He currently reports no symptoms. He says he has received all the necessary vaccinations, including BCG. He has no past medical or surgical history. His sister had TB seven years ago and was treated. He is currently not sexually active. He takes no medications. He does not drink alcohol, ingest illicit drugs, or smoke cigarettes. Which of the following should be done to evaluate for TB in this patient?

Choices:

1. Interferon-gamma release assay
2. Tuberculin skin testing
3. Chest x-ray
4. Induced sputum culture for AFB

Moh'd Terbi

Answer: 1 - Interferon-gamma release assay

Explanations:

- The patient has a likely possibility to have been infected with TB given his immigration from an endemic country and family history. The patient currently has no symptoms and is up to date on his vaccinations, which include the BCG vaccine. The first step in evaluation would be to send an interferon-gamma release assay.
- Since he already has a BCG vaccine, tuberculin skin testing would likely result in a false positive. If the gamma assay is positive, he should have a chest x-ray to rule out active tuberculosis.
- If the patient has a latent infection, he should be on anti-tuberculosis therapy. The NTCA- and CDC-recommended treatment regimens comprise three preferred rifamycin-based regimens and two alternative monotherapy regimens with daily isoniazid. These are only recommended for persons infected with Mycobacterium tuberculosis that is presumed to be susceptible to isoniazid or rifampin. A regimen of 3 months of once-weekly isoniazid plus rifapentine is a preferred regimen that is strongly recommended for children aged more than 2 years and adults. Another option is 4 months of daily rifampin for HIV-negative adults and children of all ages. Three months of daily isoniazid plus rifampin is a preferred treatment that is conditionally recommended for adults and children of all ages and for patients with HIV. Regimens of 6 or 9 months of daily isoniazid are alternative recommended regimens.
- Since the patient is not symptomatic, a sputum analysis is not recommended. Latent TB is not contagious. It has a 4 to 5% chance to convert into active TB.

Mohit Tehri

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desired).

Research Concepts:

Tuberculosis




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Moh'd Terbi

Question 982: A 17-year-old male patient with a history of recreational drug use presents to the emergency department with a 3-hour history of depersonalization, blurry vision, slurred speech, an ataxic gait, and hallucinations. The patient was at a party shortly before his symptoms began. His blood pressure is 170/92 mmHg, pulse 120/min, and temperature 99.9 F (37.7 C). On physical examination, the patient is aggressive, combative, and poorly cooperative. His skin is diffusely erythematous, pupils are 8mm bilaterally, and bilateral nystagmus is present. Urine toxicology confirms the diagnosis. The patient is most likely also to experience which of the following symptoms?

Choices:

1. Homicidal impulses
2. Increased appetite
3. Nosebleed
4. Decreased respiratory rate

Moh'd Terbi

Answer: 1 - Homicidal impulses

Explanations:

- Phencyclidine (PCP) is a dissociative anesthetic that is a commonly used recreational drug. PCP is a crystalline powder that can be ingested orally, injected intravenously, inhaled, or smoked.
- PCP is a non-competitive antagonist to the NMDA receptor, which causes analgesia, anesthesia, cognitive defects, and psychosis. PCP blocks the uptake of dopamine and norepinephrine, leading to sympathomimetic effects such as hypertension, tachycardia, bronchodilation, and agitation.
- Patients intoxicated with PCP are at increased risk for suicidal or homicidal behaviors and impulses.
- Aggressive behavior, loss of boundaries, and combativeness are associated with PCP intoxication.

Mon'd Terbi

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Research Concepts:

Phencyclidine Toxicity




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Question 983: A 9-month-old girl is brought to the hospital for fever and tachypnea. Rales are heard on auscultation of her chest. She has had multiple admissions for similar symptoms over several months. Which of the following clinical exam findings is most likely to be present in this patient?

Choices:

1. Flail chest
2. A horizontal sulcus at the 6th rib level
3. Pes excavatum
4. Rachitic rosary

Moh'd Terbi

Answer: 2 - A horizontal sulcus at the 6th rib level

Explanations:

- Multiple severe respiratory illnesses, such as pneumonia, make developing Harrison's groove likely.
- Multiple childhood diseases that effect the chest can increase the depth of Harrison's groove.
- The presence of Harrison's groove and last throughout childhood and into adulthood.
- More than two episodes of pneumonia within the first two years of life is associated with a deeper Harrison's groove.

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Moh'd Tesh

Research Concepts:

Anatomy, Abdomen and Pelvis, Harrison Groove




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Question 984: A 16-year-old boy collapsed suddenly while playing basketball today. He is brought to the emergency department, and ECG shows ventricular arrhythmia. Attempts are made to revive the patient, but the patient dies. On asking the family members, they say that they have a family history of sudden cardiac death. Autopsy of the body reveals asymmetric septal hypertrophy of the intraventricular septum. Which of the following mutation is most likely present in this patient?

Choices:

1. Mutation of sarcomere protein like a beta-myosin heavy chain
2. Mutation of sarcomere protein like a beta-myosin light chain
3. Mutation of sarcomere protein like an alpha-myosin light chain
4. Mutation of sarcomere protein like an alpha-myosin heavy chain

Moh'd Terbi

Answer: 1 - Mutation of sarcomere protein like a beta-myosin heavy chain

Explanations:

- Hypertrophic obstructive cardiomyopathy is a significant cause of sudden cardiac death in young people, including well-trained athletes, affecting men and women equally across all races. In most patients, it results from asymmetric septal hypertrophy causing outflow obstruction of the left ventricle.
- Hypertrophic cardiomyopathy is caused by a mutation in the sarcomere genes such as B-myosin heavy chain, troponin, actin, and titin. It follows an autosomal dominant mode of inheritance.
- The hypertrophy can occur in any segment of the left ventricle but is most common in the interventricular septum. This often results in obstruction of blood flow through the left ventricular outflow tract.
- It is difficult to diagnose and presents a challenge to medical health professionals in evaluating at-risk athletes. Unfortunately, hypertrophic obstructive cardiomyopathy is often not diagnosed until a significant cardiac event has occurred.

Moh'd Terky

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Research Concepts:

Hypertrophic Obstructive Cardiomyopathy




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improvement.

Moh'd Terbi

Question 985: A 10-year-old male patient is brought to the clinic for a follow-up after hospitalization for meningitis. The patient was admitted three times this year for pneumonia, along with frequent outpatient visits for sinus infections. He has a history of similar episodes during childhood. He is human immunodeficiency virus-negative. His complete blood count is normal. Lab analysis shows normal quantitative measurements of IgG, IgA, and IgM. Responses to pneumococcal vaccination and tetanus vaccination are also normal. On further evaluation, his CH50 is found low. Given the patient's underlying condition, what would be the best step in management regarding vaccinations?

Choices:

1. Defer all killed vaccines
2. Defer all bacterial vaccines
3. Defer all live viral vaccines
4. Proceed with all scheduled vaccines

Mohsen Terbi

Answer: 4 - Proceed with all scheduled vaccines

Explanations:

- This patient's meningitis, recurrent pneumonia, and recurrent sinus infections are suggestive of complement deficiency. And the diagnostic workup also points towards complement deficiency with low CH50. He has no evidence of antibody deficiency.
- The complement system is a prominent part of the innate system that orchestrates opsonization, facilitates cytotoxic destruction, formulates membrane attack complexes (MAC), and liberates peptides that promote the inflammatory response.
- Complement deficiency involves recurrent bacterial infections (e.g., pneumococcal pneumonia and gonococcal meningitis) and does not affect immunologic memory.
- Patients should complete all scheduled immunizations, especially pneumococcal and gonococcal vaccines, to reduce recurrence. There is no contraindication to bacterial or live viral vaccines.

Mona Terbi

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Research Concepts:

Complement Deficiency




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Question 986: A 3-year-old male is brought by his mother due to fever that started six days ago that has not responded to oral acetaminophen. There is no diarrhea, coughing, vomiting, or dysuria. The patient's medical history is significant for otitis media that occurred one year ago and bronchitis that occurred three months ago. The patient's older brother has asthma. On physical examination, temperature is 40 C, blood pressure is 110/81 mmHg, pulse is 110 beats/min, and respiratory rate is 19 breaths/min. The head is normocephalic. The conjunctivae are injected, and the pupils are reactive to light and accommodation. The lips and tongue are erythematous, and there are non-tender, erythematous macules on the perineum, inner thighs, and trunk. His hands and feet appear to be swollen. Erythrocyte sediment rate (ESR) and C-reactive protein (CRP) are both elevated. The diagnosis was established, and the patient was started on appropriate treatment. The patient's rash and fever subside over the next two days after treatment. Which of the following is the next best step in the management of this patient?

Med'd Terbi

Choices:

1. No further management is needed
2. The patient routine vaccinations should be postponed
3. The patient should be discharged with a 1-week course of oral prednisone
4. The patient should be referred to see a nephrologist

Answer: 2 - The patient routine vaccinations should be postponed

Explanations:

- This patient with fever, conjunctivitis, rash, extremity edema, and erythematous lips and tongue likely has Kawasaki disease.
- The diagnostic criteria for Kawasaki disease are fever for five days or more along with four or more of the following findings: conjunctivitis, rash on trunk/extremities, cervical lymphadenopathy, injected lips/tongue/pharynx, and edema of the hands or feet.
- The treatment of Kawasaki disease is aspirin and intravenous immunoglobulins.
- Intravenous immunoglobulins contain pooled immunoglobulin G (IgG) from the plasma of thousands of blood donors. These immunoglobulins can interfere with the immune system's intended response to live vaccines. Hence, patients treated with intravenous immunoglobulins should not have live vaccines administered for at least 1 year.

Moni Terbi

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Research Concepts:

Kawasaki Disease




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Question 987: A 3-month-old male infant is brought to the emergency department for evaluation for constipation. As per parents, the last stool was passed 3 days ago. There is no history of fever, cough, rash, vomiting, or any sick contacts. The patient only feeds breastmilk but has been feeding less for 2 days, and the mother reports the baby to be less active since yesterday. The family has recently immigrated from Mexico, and the mother has been giving the baby a honey pacifier. The patient is saturating 95% on room air, respiratory rate is 26/min, heart rate 110/min, and temperature 98.7 degrees F. On examination, the patient is awake, has hypotonia, reflexes are decreased in all extremities, and ocular examination reveals dilated pupils with ptosis of the eyelids. Complete blood count and comprehensive metabolic profile, including magnesium, phosphorous levels are obtained and are within normal limits for the age. The glucose level is 78 mg/dL. What is the best initial step in the management of this patient?

Moh'd Terbi

Choices:

1. Supportive care and observation
2. Ultrasound of the head
3. Brain magnetic resonance imaging
4. Blood cultures

Answer: 1 - Supportive care and observation

Explanations:

- Infantile botulism is caused by Clostridium botulinum, which is an anaerobic, gram-positive bacteria. It can spread by ingestion of honey or honey related products and soil.
- Constipation is often the first presenting feature. Other features include cranial nerve involvement, respiratory problems, hypotonia, feeding difficulties, and decreased reflexes.
- Treatment is mainly providing supportive care with special attention to pulmonary hygiene and nutritional support.
- Antibiotics should be avoided as it can cause lyses of the bacteria in the intestines and may lead to the release of massive amounts of toxins.

Mohd Terbi

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Research Concepts:

Hypotonia




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Question 988: A 9-week-old infant is brought to the pediatrician by his parents for the chief complaint of irritability and fussiness. The mother reports that the baby was born full-term and developed normally until around three weeks of age. Around that time, the baby began to cry inconsolably for hours nearly every day. Parents have made sure the baby is fed and changed. They have tried the bouncy seat, swing, and stroller rides without benefit. The father states that he has now resorted to driving the interstate for at least an hour every evening so the mother can get a small break. He states that he has to drive on the interstate because if he gets stopped at a red light, the baby will immediately start to scream. After reviewing the normal growth charts and completing a thorough physical exam, which is unremarkable, what recommendations can be given to the parents?

Choices:

Moh'd Tarkh

1. The infant should be referred to a pediatric gastroenterologist for further evaluation
2. The infant can be monitored closely without intervention
3. They should take the infant to the emergency department for a septic workup
4. They should try giving the infant herbal calming tea every other feed

Answer: 2 - The infant can be monitored closely without intervention

Explanations:

- The infant in the vignette has colic. Pain does not respond to traffic signals. The baby crying at red lights but calming with a constantly moving car is reassuring that there is not an underlying organic cause for the infant's crying.
- Infants with colic do not need to be referred to a specialist or have any further testing if they are growing well and meeting developmental milestones.
- Colic will resolve in 90% of infants by 16 weeks of life.
- Herbal tea is not an appropriate recommendation for an infant. The dosing of the herbs is not reliable, and you can induce hyponatremia and poor weight gain by giving an infant water/tea.

Mohd Terbi

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Research Concepts:

Colic




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Question 989: A 16-year-old boy presents to the emergency department with headaches and vomiting. He was discharged four days ago after sustaining a basilar skull fracture while playing hockey. On presentation, his temperature is 38.6º Celsius, his heart rate 112 beats/minute, and his blood pressure 129/78 mmHg. He is pale and covering his eyes. What is the most likely organism causing his illness?

Choices:

1. Staphylococcus epidermidis
2. Klebsiella pneumoniae
3. Streptococcus pneumoniae
4. Streptococcus pyogenes

Moh'd Terbi

Answer: 3 - Streptococcus pneumoniae

Explanations:

- Meningitis is a recognized complication of skull fractures.
- 50 to 70% of meningitis following skull fracture is caused by Streptococcus pneumonia.
- When there is disruption of the barrier between the anterior and middle cranial fossae and the sinuses, a cerebrospinal fluid (CSF) leak can occur. To identify a leak of CSF, beta-2 transferrin is the best laboratory test available, but it does not provide the site of the leak.
- The use of prophylactic antibiotics in all cases of CSF rhinorrhea has not been shown to decrease the risk of meningitis.

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Research Concepts:

Pediatric Skull Fractures




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Question 990: A mother rushed to the emergency department with her six months old child. The child had been crying after a trivial head injury. The mother was restless with fear of severe head injury. After a detailed examination, the provider advised radiographs and computed tomography (CT) scan of the skull to rule out any internal injury. Radiographs of the skull show a line in the frontal part of the skull extending from bridge of the nose to bregma. The provider mentioned the line as a normal finding. At what age does this line fuse?

Choices:

1. The line will never fuse.
2. 12 months
3. 10 months
4. 12 years

Moh'd Terbi

Answer: 2 - 12 months

Explanations:

- The line extending from the bridge of the nose to the bregma is the interfrontal suture also known as the metopic suture.
- The metopic suture is the sutural joint between two frontal bones, which is present usually in the fetus. This suture fuses normally at the age of 12 months of age.
- Early closure of the line may affect the growth of the brain. Late closure indicates a deficiency of calcium and vitamin D in the child.
- The presence of metopic suture in the skull radiograph of the fetus, child of up to the age of 1 year, is a normal finding and does not indicate the fracture line.

Mohd Terbi

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Research Concepts:

Anatomy, Head and Neck, Glabella




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Question 991: A neonate develops severe respiratory distress at 6 minutes of age. The nurse starts neonatal resuscitation and performs chest compressions. Which of the following is most effective when performing this maneuver?

Choices:

1. Performed at a rate of at least 90/min
2. Performed at a rate of at least 60/min
3. Compression:inflation ratio should be 4:1
4. The palms of both hands are used during chest compressions

Moh'd Terbi

Answer: 1 - Performed at a rate of at least 90/min

Explanations:

- Resuscitation should always begin immediately if a patient becomes cyanotic, asystolic, or is in respiratory arrest but can be initiated if the patient is ill-appearing and their heart rate is less than 60 bpm. If a patient has a pulse, rescue breaths and chest compressions are indicated if impending airway failure is suspected.
- At least 90 compressions per minute are considered to be effective chest compressions.
- Approximately 20 to 30 rescue breaths should be given per minute for adequate ventilation, accompanied by 100 to 120 chest compressions. Three chest compressions should be given before or after each inflation, adding up to a total of 30 inflations and 90 compressions per minute (3:1 ratio). The total number of events in a minute will be 120.
- The two-finger or two-thumb methods of chest compressions are both acceptable means of performing cardiopulmonary resuscitation in neonates.

Mohd Tariq

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Research Concepts:

Pediatric And Neonatal Resuscitation




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Question 992: A 9-hour old term male neonate develops severe respiratory distress and is gasping for breath. The mother's pregnancy was uneventful other than oligohydramnios, and he was delivered through an emergent cesarean section due to breech presentation. Family history is not significant for any cardiac or renal disorders in either parent. The baby appeared ill-looking with severe respiratory distress as well as central and peripheral cyanosis. After initial resuscitation, he was put on respiratory support with intranasal oxygen and bubble CPAP. A urethral catheter drained no urine one hour after admission even after a fluid challenge with normal saline. The patient's desaturation was persistent, and his clinical condition continued to deteriorate. He was eventually declared dead at 17 hours of life. Cut sections of the kidneys showed numerous, variably sized cysts. Which of the following is most likely an additional autopsy finding of this patient?

Moh'd Terbi

Choices:

1. Diverticulosis
2. Aortic aneurysm
3. Hepatic cirrhosis
4. Central nervous system hamartomas

Answer: 3 - Hepatic cirrhosis

Explanations:

- In autosomal recessive polycystic kidney disease (ARPKD), there is cystic dilation of the renal collecting ducts and large, echogenic kidneys. It can have prenatal, neonatal, infantile, and juvenile presentations.
- Significant oliguric renal failure in utero can lead to Potter sequence. Pulmonary hypoplasia is secondary to oligohydramnios with severe kidney disease in utero. It is commonly associated with liver cirrhosis. Concerns beyond the neonatal period include systemic hypertension, progressive renal insufficiency, and portal hypertension from congenital hepatic fibrosis.
- There is an inverse relationship between the severity of renal involvement and liver involvement. The juvenile form will have more liver disease and a milder form of renal derangement. Patients with ARPKD have large echogenic kidneys.
- Diverticulosis and berry aneurysms are commonly associated with autosomal dominant polycystic kidney disease (ADPKD) which is far more common than ARPDK and most commonly presents in adults.

Mohsen Tehrani

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Research Concepts:

Polycystic Kidney Disease Of Childhood



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Question 993: A girl is brought to the clinic for her well-child visit. She is able to point to a picture in a book and knows where her mouth, nose, and head are. She can imitate a line on a piece of paper. Which of the following additional actions is she most likely to perform?

Choices:

1. Wash her hands
2. Differentiate left from right
3. Balance herself on one foot
4. Have speech that is 75% understandable to strangers

Moh'd Terbi

Answer: 1 - Wash her hands

Explanations:

- A 24-month-old child should be able to copy a line, wash her hands, put two words together, have 50% understandable speech by strangers, and know her body parts.
- At 3 years of age, speech should be 75% intelligible by strangers.
- At 6 years of age, a child should understand left from right.
- At 3 years of age, a child can balance on one leg.

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Research Concepts:

Moh'd Terro

Child Development




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Question 994: An 8-year-old boy is brought to the clinic complaining of a new "rash." His mother states it started 2 months ago and has not resolved. There are multiple 1-2 mm shiny, flat, topped, pearly pink papules on his abdomen. The patient denies any symptoms, such as pruritus. What is the best initial step in the management of this patient?

Choices:

1. Doxycycline
2. Cryotherapy
3. Reassurance
4. Cantharidin

Moh'd Terbi

Answer: 3 - Reassurance

Explanations:

- This patient has lichen nitidus.
- Lichen nitidus in most cases spontaneously resolves on its own within a few months to a year without requiring treatment.
- Treatment options are available if patients are symptomatic (experiencing pruritus). The above patient is asymptomatic and the lesions will most likely resolve on their own.
- Doxycycline is an antibiotic useful for infections. It is also used in acne patients for its anti-inflammatory properties. Crypotherapy is useful for warts, actinic keratosis, and early skin cancers such as squamous cell carcinoma. There is no benefit of cryotherapy in LN patients. Cantharidin is used for treatment of warts and is not a reported treatment option for lichen nitidus.

Mohd Terbi

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Research Concepts:

Lichen Nitidus




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Question 995: A 2-year-old male with no past medical history comes for his annual check-up. The mother states that recently she has noticed that her child is eating less, the urine appears darker and seems to be taking more naps now. The physical exam is remarkable for splenomegaly. Further workup demonstrates normal right upper quadrant ultrasound with no laboratory abnormalities except elevated GGT levels. A subsequent liver biopsy demonstrates findings consistent with progressive familial intrahepatic cholestasis type 3. For which of the following should the patient be tested?

Choices:

1. Vitamin C deficiency
2. Vitamin A deficiency
3. Vitamin B12 deficiency
4. Selenium deficiency

Moh'd Terbi

Answer: 2 - Vitamin A deficiency

Explanations:

- Patients with progressive familial intrahepatic cholestasis should be tested for fat-soluble vitamin deficiencies.
- Fat-soluble vitamin deficiencies include vitamins A, D, E, and K.
- Vitamin A is a part of rhodopsin, a visual pigment and deficiency can result in night blindness and xeropthalmia.
- Vitamin A deficiency is associated with dry skin, delayed growth, poor wound healing, bitot spots, and impaired immunity.

Go to the next page if you knew the correct answer, or click the link image(s) below to further research the concepts in this question (if desired).

Research Concepts:

Moh'd Terbi

Progressive Familial Intrahepatic Cholestasis




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Question 996: An 18-month-old boy born full-term is brought to the emergency department because of rapid breathing. His mother says he has had nasal congestion and decreased oral intake for the last two days. Vital signs show a temperature of 38.0 C, pulse rate of 150 beats/min, respiratory rate of 60 breaths/min, blood pressure of 80/40 mmHg, and oxygen saturation of 93% on room air. Respiratory examination shows tachypnea, nasal flaring, mild intercostal retractions, and wheezing bilaterally. Intercostal retractions improved after deep nasal suctioning. As the family is counseled about the etiology likely being viral in origin, the family insists on advanced testing as they believe it is necessary to know which virus is the culprit for the patient's symptoms. Which of the following statements is appropriate for further counseling?

Choices:

Mehul Tenth

1. Human rhinovirus is the most likely etiology of bronchiolitis.
2. A viral antigen panel is indicated as the course of illness is highly determinate on the viral etiology.
3. Almost 80% of patients diagnosed with bronchiolitis are positive for RSV, so testing is not absolutely necessary.
4. A chest radiograph must be obtained, and if there is no evidence of pneumonia, then a viral test should be performed.

Answer: 3 - Almost 80% of patients diagnosed with bronchiolitis are positive for RSV, so testing is not absolutely necessary.

Explanations:

- Bronchiolitis is an inflammation of the bronchioles usually caused by an acute viral illness.
- It is the most common lower respiratory tract infection in children under 2 years of age.
- The respiratory syncytial virus is the most common infectious agent causing acute bronchiolitis in children. 80% of diagnoses with bronchiolitis are positive for RSV. The next most common agent to cause bronchiolitis is human rhinovirus.
- Other viruses responsible for bronchiolitis include adenovirus, human metapneumovirus, influenza, and parainfluenza. A chest radiograph is not indicated in patients with the clinical diagnosis of bronchiolitis and may lead to the overuse of antibiotics and inpatient admissions.

Wan'd Terbi

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Research Concepts:

Pediatric Bronchiolitis




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Question 997: A 10-year-old female with a history of eczema presents with a rash on her forehead and eyelids. She says she feels well and denies systemic symptoms. The child is afebrile and well-appearing in the office. Skin examination demonstrates diffuse xerosis and multiple umbilicated vesicles with punched-out erosions and hemorrhagic crust on her forehead and eyelids. After initiating therapy, which of the following is the most appropriate next step in managing this patient?

Choices:

1. Referral to the emergency department for hospital admission
2. Referral to an infectious disease specialist
3. Referral to an ophthalmologist
4. Advise the patient to quarantine for 14 days

Moh'd Terbi

Answer: 3 - Referral to an ophthalmologist

Explanations:

- Eczema herpeticum develops in skin that has been disrupted by underlying eczema. Characteristic features include multiple monomorphic vesicles on an erythematous base and "punched-out" erosions with overlying hemorrhagic crusts.
- Eczema herpeticum lesions within the eye can cause keratoconjunctivitis.
- Patients with eczema herpeticum affecting the eyelid should be referred to an ophthalmologist who can evaluate for keratoconjunctivitis.
- Keratoconjunctivitis is a potential complication of eczema herpeticum that requires prompt treatment, as it may lead to permanent stromal scarring.

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Research Concepts:

Eczema Herpeticum




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Question 998: A 4-year-old male presents to the pediatric clinic after failed extensive evaluation for dysphagia. He has a language delay and points to the throat expressing discomfort as he swallows. The parents report that it first started at 3 years of age and has progressively worsened to the point that he is unable to eat hard, larger food particles. The physical examination is unremarkable. On chest x-ray, leftward deviation of the trachea. Which is the most likely of the following aortic arch anomalies in this patient?

Choices:

1. Right aortic arch with mirror image branching
2. Right aortic arch with aberrant left subclavian artery
3. Left aortic arch with a common origin of brachiocephalic and left common carotid artery
4. Double aortic arch

Moh'd Terbi

Answer: 2 - Right aortic arch with aberrant left subclavian artery

Explanations:

- The child's symptoms are possibly secondary to esophageal narrowing from an aberrant left subclavian, which is seen as a leftward deviation of trachea on a chest x-ray.
- CT angiogram can delineate the arch anatomy in detail before the surgical correction.
- Although a double aortic arch is a possibility, they most often present with stridor at a much younger age.
- Left aortic arch with a common origin of brachiocephalic and left common carotid artery is a normal variant called "bovine aortic arch" and does not lead to the formation of a vascular ring and hence patients with his variant are asymptomatic.

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Research Concepts:

Vascular Aortic Arch Ring




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Question 999: A 16-year-old boy presents with complaints of loose, watery diarrhea, body aches, and vomiting. On examination, the patient appears to be lethargic and restless. Blood tests show leukocytosis and elevated c-reactive protein (CRP). A stool sample is sent, and the patient is admitted to the hospital. What is the most important aspect of management in patients with this presentation?

Choices:

1. Antibiotics
2. Antivirals
3. Fluids
4. Regular cardiac monitoring

Moh'd Terbi

Answer: 3 - Fluids

Explanations:

- Vibrio cholerae secretes cholera toxin, causing profuse, watery diarrhea known as rice-water stool. Symptoms include an abrupt onset of watery diarrhea, vomiting, and abdominal cramps. Dehydration ensues, with thirst, dry mucous membranes, sunken eyes, decreased skin turgor, hypotension, weak radial pulse, tachycardia, tachypnea, and oliguria.
- Supportive care is the main therapy with Vibrio cholerae. Death due to dehydration may occur in a few hours to days in untreated children.
- Vibrio cholerae is a gram-negative, comma-shaped bacterium found in brackish or saltwater. It can undergo respiratory and fermentative metabolism. When ingested, it causes diarrhea and vomiting in a host within several hours to days.
- When visiting areas with an epidemic cholera, drink bottled water, wash hands with soap and safe water, use chemical toilets or bury feces, do not defecate in any body of water, and cook food thoroughly.

Moni Tirth

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Research Concepts:

Vibrio Cholerae




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improvement.

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Question 1000: A 17-year-old girl is brought to the emergency department following an attempted suicide. The causative agent is unknown, and she says that she ate some pills from her family's medicine cabinet. She is having intense nausea and has vomited multiple times in the past 3 hours. Her past medical history is significant for major depressive disorder for the past eight years, and she takes citalopram for her disease. Her family history is positive for completed suicide in her paternal aunt. The patient's vitals are temperature 99.5 F (37.5 C), blood pressure 100/50 mmHg, respiratory rate 30/min, and pulse 105/min. The physical examination reveals no significant findings. Her arterial blood gases are analyzed to reveal respiratory alkalosis mixed with metabolic acidosis. What is the definitive management of this poisoning?

Choices:

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1. N-acetylcysteine
2. Glucagon infusion
3. Insulin infusion
4. Sodium bicarbonate infusion

Answer: 4 - Sodium bicarbonate infusion

Explanations:

- This patient's arterial blood gasses suggest salicylate toxicity.
- Salicylate toxicity causes respiratory alkalosis and metabolic acidosis.
- Definitive management for salicylate toxicity is sodium bicarbonate infusion. This causes alkalinization of the urine, and thus increased excretion.
- Dialysis may be used in refractory cases; however, it is not the first line of defense.

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Research Concepts:

Salicylates Toxicity




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- Physical Therapy-Pediatrics
- Physical Therapy-Sports
- Lab-Chemistry
- Lab-Blood Banking
- Lab-Microbiology
- Lab-Hematology
- EMR-First Medical Responder

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- EMS-Community Paramedic
- Lab-Medical Laboratory Scientist (MLS)
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- CNS-Neonatal

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- Family Medicine
- Gastroenterology
- Genetics
- Geriatrics
- Hematology
- Hospice And Palliative Medicine
- Infectious Disease
- Internal Medicine
- Nephrology
- Neurology
- Neurology-Headache
- Neurodevelopmental Disabilities
- Neuromuscular Medicine
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- Pediatric
- Pediatric-Cardiology
- Pediatric-Child Abuse
- Pediatric-Critical Care
- Pediatric-Developmental
- Pediatric-Emergency Medicine
- Pediatric-Endocrinology
- Pediatric-Gastroenterology

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- Pediatric-Hematology-Oncology
- Pediatric-Infectious Diseases
- Pediatric-Neonatal Perinatal
- Pediatric-Nephrology
- Pediatric-Neurology
- Pediatric-Pulmonology
- Pediatric-Rehabilitation
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- Urology - Pediatric
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- Pathology-Cytopathology
- Pathology-Forensics
- Pathology-Hematology
- Pathology-Microbiology

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- Pathology-Molecular Genetic
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- Certified Hypertension Specialist
- Ophthalmology - Cornea & External Eye Disease
- Ophthalmology - Glaucoma
- Ophthalmology - Neuro
- Ophthalmology - Pediatric & Strabismus
- Ophthalmology - Cataract
- UK PLAB 1
- Australian Medical Council-IMG
- Canada MCC-QE 1
- Optometry-Basic Science
- Optometry-Advanced Medical Care
- National Board Dental Examination (NBDE) Part I
- Pakistan Medical Commission NLE

Medical Student Specialties

Moh'd Terbi

- USMLE Step 1
- USMLE Step 2
- USMLE Step 3
- COMLEX Level 1
- COMLEX Level 2
- COMLEX Level 3
- Ambulatory Care-Medical Student
- Neurology-Medical Student
- Family Medicine-Medical Student
- Internal Medicine-Med Student
- Ob Gyn-Medical Student
- Pediatrics-Medical Student
- Psychiatry-Medical Student
- Surgery-Medical Student
- Emergency Medicine-Med Student
- Internal Medicine Advanced-Med Student
- Indian PG Entrance Exam-NEETPG
- Dermatology-Medical Student
- Clinical Diagnosis

- Anatomy-Medical Student
- Behavioral Sci-Medical Student
- Biochemistry-Medical Student
- Embryology-Medical Student
- Genetics-Medical Student
- Histology-Medical Student
- Microbiology-Medical Student
- Neuroanatomy-Medical Student
- Path Clin Lab-Medical Student
- Pathology-Medical Student
- Pharmacology-Medical Student
- Physiology-Medical Student
- Philippine Physician Exam (PLE)
- Statistics and Healthcare Economics
- Law, Medicine, and Ethics
- Pakistan-1st Professional
- Pakistan-3rd Professional
- Pakistan-4th Professional
- Pakistan-Final Professional
- Ophthalmology-Medical Student
- Indonesia CBT Final Examination
- Nepal Medical Council Exam
- Medical Council Nigeria (MDCN)
- Allergy - Medical Student
- Anesthesiology - Medical Student
- Cardiology - Medical Student
- Critical Care-Medical Student
- Endocrinology-Medical Student
- Gastroenterology-Medical Student
- Infectious Disease-Medical Student
- Nephrology-Medical Student
- Oncology-Medical Student
- Peds-Cardiology Medical Student
- Peds-Critical Care Medical Student
- Peds-Endocrinology Med Student
- Peds-GI Medical Student

Moh'd Terbi

- Peds-Hem Onc-Medical Student
- Peds-ID-Medical Student
- Peds-Neonatal Medical Student
- Peds-Nephrology Medical Student
- Peds-Pulmonology Medical Student
- Physical Medicine-Medical Student
- Pulmonary-Medical Student
- Diagnostic Radiology-Medical Student
- Rheumatology-Medical Student
- Neurosurgery-Medical Student
- Orthopedic-Medical Student
- Urology-Medical Student
- Otolaryngology-Medical Student
- Cardiothoracic-Medical Student
- Plastic Surgery-Medical Student
- Vascular Surgery-Medical Student
- Caribbean Medical Licensing Exam
- Peds-Surgery Medical Student
- Peds-Neurology Medical Student
- Osteopathic Manipulation
- Hematology-Medical Student
- Hand-Medical Student
- Sports Medicine-Medical Student
- ENARM Mexico Exam
- Pakistan FCPS (Basic Science)
- Pakistan-2nd Professional

Mohd Yerbi

Nurse Practitioner Specialties

- NP-Acute Adult and Gerontology
- NP-Diabetes Management
- NP-Family
- NP-Psychiatric Mental Health
- NP-Adult-Geriatric Primary Care
- NP-Midwife
- NP-Pediatric Primary Care

- NP-Emergency Medicine
- NP-Women's Health Care
- NP-Acute Care Pediatric
- NP-Neonatal
- NP-Dermatology
- NP-Addiction
- NP-Nephrology
- NP-Oncology
- NP-Orthopedic
- NP-Advanced Health Assessment
- NP-Advanced Pharmacology
- NP-Advanced Pathophysiology
- NP-Advanced Physiology
- NP-Urology
- NP-Wound, Continence, And Ostomy
- NP-Advanced Neurovascular Practitioner

Moh'd Terbi

Physician Assistant Specialties

- PA-PANCE
- PA-PANRE
- PA-Cardiovascular Thoracic
- PA-Emergency Medicine
- PA-Hospital Medicine
- PA-Nephrology
- PA-Orthopedic
- PA-Pediatric
- PA-Psychiatry

Pharmacist Specialties

- Pharmacy-Technician (PTCB)
- Pharmacy-NAPLEX Review
- Pharmacy-Ambulatory Care
- Pharmacy-Critical Care
- Pharmacy-Nutrition Support
- Pharmacy-Oncology

- Pharmacy-Pediatric
- Pharmacy-Pharmacotherapy
- Pharmacy-Psychiatric
- Pharmacy-Infectious Disease
- Pharmacy-Geriatric
- Pharmacy-Cardiac
- Pharmacy-Applied Toxicology

Nursing Specialties

- NP-Pediatric Mental Health Specialist (PMHS)
- LPN LVN NCLEX PN-Nursing Student
- NCLEX RN-Nursing Student
- Community Health-Nursing Student
- Adult Medical Surgical RN-Nursing Student
- Maternal Newborn PN-Nursing Student
- Child Health RN-Nursing Student
- Mental Health RN-Nursing Student
- Fundamentals-Nursing Student
- Mental Health PN-Nursing Student
- Pharmacology RN-Nursing Student
- Professional Ethics-Nursing Student
- Calculations-Nursing Student
- Maternal Newborn RN-Nursing Student
- Pharmacology PN-Nursing Student
- Adult Medical Surgical PN-Nursing Student
- Child Health PN-Nursing Student
- Anatomy-Nursing Student
- Physiology-Nursing Student
- Microbiology-Nursing Student
- Nutrition-Nursing Student
- Lab and Diagnostic Testing-Nursing Student
- Elder Adult Care-Nursing Student
- Critical Care Rhythms-Nursing Student
- Pathophysiology-Nursing Student
- Health Assessment-Nursing Student

Mohit Tolbi

- Nurse-Addiction (CARN)
- Nurse-Administrator NE NEA
- Nurse-AIDS-HIV (ACRN AACRN)
- Nurse-Ambulatory Care
- Nurse-Perianesthesia CAPA-CPAN
- Nurse-Anticoagulation
- Nurse-Bariatric (CBN)
- Nurse-Breast Care CBCN© Review
- Nurse-Cardiovascular CVN-CVRN
- Nurse-Case Management
- Nurse-Continence Care
- Nurse-Corrections (CCHP)
- Nurse-Critical Care (CCRN)
- Nurse-Dermatology (DNC)
- Nurse-Certified Diabetes Specialist
- Nurse-Emergency Certification
- Nurse-Flight Registered (CFRN)
- Nurse-Foot-Nail Care (CFCN)
- Nurse-Gastroenterology (CGRN)
- Nurse-Gerontology (NCA)
- Nurse-Hemodialysis (CHN)
- Nurse-Hospice-Palliative CHPN
- Nurse-Hyperbaric (CHRN)
- Nurse-Infection Control (CIC)
- Nurse-Infusion (CRNI)
- Nurse-Lactation (CLA)
- Nurse-Low Risk Neonatal (LRN)
- Nurse-Maternal Newborn (MNN)
- Nurse-Medical Surgical
- Nurse-Neonatal Intensive Care
- Nurse-Nephrology (CNN)
- Nurse-Neuroscience (CNRN)
- Nurse-Occupational (COHN)
- Nurse-Oncology (OCN)
- Nurse-Operating Room (CNOR)
- Nurse-Ophthalmology (CRNO)

Mokhtar Terbi

- Nurse-Orthopedic (ONC)
- Nurse-Otolaryngology (CORLN)
- Nurse-Pain Management (PMCN)
- Nurse-Pediatric (CPN)
- Nurse-Pediatric Critical Care
- Nurse-Pediatric Emergency CPEN
- Nurse-Pediatric Hem Onc (CPHON)
- Nurse-Inpatient Obstetric RNC
- Nurse-Plastic Surgery (CPSN)
- Nurse-Professional Development
- Nurse-Healthcare Quality
- Nurse-Progressive Care (PCCN)
- Nurse-Psychiatric Health
- Nurse-Radiologic (CRN)
- Nurse-Rehabilitation Registered
- Nurse-Risk Management (CPHRM)
- Nurse-Sexual Assault (SANE)
- Nurse-Transplant (CCTN-CCTC))
- Nurse-Transport (CTRN)
- Nurse-Urologic Registered
- Nurse-Wound Care
- Nurse-Eating Disorders (CEDRN)
- Nurse-Neonatal Transport C-NPT
- Nurse-Trauma (TCRN)
- Nurse-Emergency Pediatric Certification
- Nurse-Stroke Certified (SC-RN)
- Nurse-Wound Care and Ostomy
- Nurse-Wound, Ostomy, and Continence
- Nurse-Clinical Leader
- Nurse-Assisted Living
- Nurse-Vascular Access (VABC)
- Nurse-School (NBCSN)

Mahdi Terbi